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HANDBOOK OF
MAINTENANCE INSTRUCTIONS

for

RADIO SET
AN/CRN-10

RESTRICTED

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SECTION I GENERAL DESCRIPTION

SAFETY NOTICE

This equipment employs high voltages which are dangerous and may be fatal if contacted by operating personnel. Exercise extreme caution and follow all instructions when working with the equipment. Interlocks are provided on the transmitter sections to disconnect all high voltages when a chassis is rolled forward. However, do not depend solely on these switches to furnish protection.

SPECIAL NOTICE

All reference in this handbook to Indicator ID-70/CRN-10 is equally applicable to Indicator ID-70A/CRN-10, except where specifically stated.

I. GENERAL.

(See figures 1-1 to 1-5.)

a. Radio set AN/CRN-10 is an air-transportable, multi-frequency instrument landing localizer intended for use as a part of the Army Air Forces Instrument Approach System. All components of this radio set, except power unit PU-25/CRN, are contained in trailer V-6/CRN-10 (the trailer itself is a part of the radio set). Provisions have been made for remote control operation of the radio set, and by the use of radio set SCR-610-()*, part of radio set AN/CRN-10, intercommunication can be accomplished between component parts of the instrument landing system installation.

b. Radio set AN/CRN-10 is essentially a radio transmitter and a radio-frequency radiating system which transmits within the frequency range of 108.3 to 110.3 megacycles. The antenna system radiates two overlap-

ping field patterns, one of which is modulated at an audio frequency of 150 cycles per second and the other modulated at 90 cycles. The field patterns can be oriented so that the intersection coincides with the centerline of a landing runway.

Aircraft equipped with suitable receiving apparatus provide an "ON COURSE" indication when they are aligned with the intersection of the two field patterns. If the aircraft is flying to the left side of the course the receiver course meter directs the pilot to "Fly Right" to get back on the course. With the aircraft flying to the right side of the course, the meter directs the pilot to "Fly Left." Lateral guidance is provided in this manner, enabling an aircraft to accurately align itself with the centerline of the runway when visibility is poor.

*The use of parentheses after any nomenclature throughout this handbook indicates that any model (letter issue) of the particular equipment may be used.

2. EQUIPMENT SUPPLIED.

For equipment supplied with radio set AN/CRN-10, see table 1-1.

TABLE 1-1. EQUIPMENT SUPPLIED

Qty	Name of Unit	Army Type Designation	Navy Type Designation	Over-all Dimensions	Weight (pounds)
1	Antenna Systems* including:	AS-156/CRN-10	AS-156/CRN-10	41 ft. x 9 ft. 10 $\frac{7}{16}$ in. x 7 ft. $\frac{3}{4}$ in.	
	1 Antenna Tuning Unit	TN-71/CRN-10	TN-71/CRN-10	2 ft. 8 $\frac{15}{16}$ in. x 1 ft. 5 $\frac{1}{4}$ in. x 11 $\frac{1}{8}$ in.	39
	7 Masts			1 ft. 10 $\frac{7}{8}$ in. x 3 $\frac{5}{8}$ in. x 1 $\frac{9}{16}$ in.	11.4
	8 Antenna Assembly	AS-155/CRN-10	AS-155/CRN-10	3 ft. 1 in. x 2 ft. 6 in. x 2 $\frac{1}{4}$ in.	5
	1 Mounting Frame	MT-289/CRN-10	MT-289/CRN-10	41 ft. x 9 ft. 10 $\frac{7}{16}$ in. x 7 ft. $\frac{3}{4}$ in.	
	1 Cord	CG-153/CRN-10	CG-153/CRN-10	6 ft. 1 $\frac{3}{16}$ in. long	
	1 Cord	CG-154/CRN-10	CG-154/CRN-10	47 ft. 9 in. long.	12
	1 Cord	CG-154/CRN-10	CG-154/CRN-10	47 ft. 11 in. long	7.5
	2 Cord	CG-152/CRN-10	CG-152/CRN-10	28 ft. 3 in. long	0.5
	2 Cord	CG-152/CRN-10	CG-152/CRN-10	19 ft. 9 in. long	
	2 Cord	CG-152/CRN-10	CG-152/CRN-10	34 ft. 2 in. long	0.5

*See Section VI for information regarding use of extra Antenna system.

TABLE 1-1. EQUIPMENT SUPPLIED (Cont.)

Qty	Name of Unit	Army Type Designation	Navy Type Designation	Over-all Dimensions	Weight (pounds)
	1 Cord	CG-152/CRN-10	CG-152/CRN-10	24 ft. 7 in. long	3
	12 Anchors			2 ft. 6 in. x $3\frac{5}{8}$ in.	
	Modulator	MD-49/CRN-10	MD-49/CRN-10	1 ft. $9\frac{3}{16}$ in. x 1 ft. $4\frac{5}{16}$ in. x 11 $\frac{1}{8}$ in.	50
1	Course Detector including:	TS-179/CRN-10	TS-179/CRN-10	11 $\frac{1}{4}$ in. x 8 $\frac{7}{8}$ in. x 31 in.	26.25
	1 Leg	LG-16-B		6 ft. x 1 $\frac{3}{16}$ in. x 1 $\frac{3}{16}$ in.	5
	1 Mounting	MT-229/CRN-10	MT-229/CRN-10	10 in. x 7 $\frac{5}{8}$ in. x 1 $\frac{1}{2}$ in.	2.6
1	Course Monitor including:	TS-180/CRN-10	TS-180/CRN-10	10 $\frac{7}{8}$ in. x 9 $\frac{3}{8}$ in. x 1 ft. 7 $\frac{5}{16}$ in.	17
	1 Cord	CX-244/CRN-10	CX-244/CRN-10	225 ft. long	22.3
	1 Mounting	MT-226/CRN-10	MT-226/CRN-10	1 ft. x 8 $\frac{5}{8}$ in. x 1 $\frac{1}{2}$ in.	2.6
	1 Tripod	LG-27-B		2 ft. 9 $\frac{1}{2}$ in. x 4 $\frac{1}{8}$ in dia.	6.3
1	Radio Transmitter including:	T-66/CRN-10	T-66/CRN-10	2 ft. 2 in. x 2 ft. 1 $\frac{3}{4}$ in. x 2 ft. 7 in.	411.5
	1 Cord (junction box to indicator)			2 ft. 7 in. long	0.3
	1 Cord (junction box to obstacle lights)			12 ft. 6 in. long	1.05
	1 Cord (12 volts d-c to junction box)			20 ft. 1 in. long	3.4
	1 Cord (115 volts a-c to junction box)			20 ft. 2 in. long	3.25
	1 Cord (junction box to transmitter)			2 ft. 9 $\frac{1}{2}$ in. long	1
	1 Cord (Transmitter to modulator)			7 ft. 1 in. long	1.4
	1 Crystal Unit (6016.66 kc)	DC-17-A			
	1 Crystal Unit (6038.88 kc)	DC-17-A			
	1 Crystal Unit (6061.11 kc)	DC-17-A			
	1 Crystal Unit (6083.33 kc)	DC-17-A			
	1 Crystal Unit (6105.55 kc)	DC-17-A			
	1 Crystal Unit (6127.77 kc)	DC-17-A			
1	Modulator and Bridge including:	MD-24/CRN-10	MD-24/CRN-10	1 ft. 11 $\frac{1}{2}$ in. x 3 ft. 7 $\frac{3}{8}$ in. x 1 ft. 8 $\frac{5}{8}$ in.	153
	1 Cord	CX-345/CRN-10	CX-345/CRN-10	10 ft. 2 $\frac{1}{2}$ in. long	
	1 Cord	CX-346/CRN-10	CX-346/CRN-10	10 ft. 2 $\frac{1}{2}$ in. long	
	1 Chest	CY-242/CRN-10	CY-242/CRN-10	2 ft. $\frac{1}{2}$ in. x 11 $\frac{1}{4}$ in. x 7	9.5
1	Indicator	ID-70/CRN-10 or ID-70A/CRN-10	ID-70/CRN-10 or ID-70A/CRN-10	1 ft. 6 $\frac{9}{16}$ in. x 1 ft. $\frac{3}{8}$ in. x 1 $\frac{13}{16}$ in.	77
1	Voltmeter	IS-176-B		4 $\frac{3}{4}$ in. x 4 $\frac{1}{4}$ in. x 1 ft. 4 in.	2.25

TABLE 1-1. EQUIPMENT SUPPLIED (Cont.)

<i>Qty</i>	<i>Name of Unit</i>	<i>Army Type Designation</i>	<i>Navy Type Designation</i>	<i>Over-all Dimensions</i>	<i>Weight (pounds)</i>
1	Trailer <i>including:</i>	V-6/CRN-10	V-6/CRN-10	6 ft. 7 in. x 5 ft. 2 in. x 5 ft. 3 in.	
	1 Chest	CY-184/CRN-10	CY-184/CRN-10	1 ft. x 1 ft. 3 $\frac{3}{4}$ in. x 8 in.	
	1 Cable Case	CY-241/CRN-10	CY-241/CRN-10	4 ft. 6 $\frac{7}{8}$ in. x 1 ft. 10 $\frac{3}{4}$ in. x 5 in.	87.9
	1 Reel Assembly	RL-107/CRN-10	RL-107/CRN-10	1 ft. 4 $\frac{3}{4}$ in. 1 ft. $\frac{3}{4}$ in x 8 $\frac{9}{16}$ in.	9
	1 Obstacle Light	MX-217/CRN-10	MX-217/CRN-10	7 ft. 9 in. x 14 in. x 6 in.	7.9
	2 Obstacle Light Combat Hoods				
1	Set of tools <i>including:</i>				
	1 Pliers*			6 in.	
	1 Electrician's Tool Kit				
	1 Voltmeter	IS-189			
	1 Screw Driver*			7 in.	
	1 Screw Driver*			5 $\frac{1}{2}$ in.	
	1 Soldering Iron				
	1 Roll Rosin Core Solder				
	1 Roll Black Friction Tape			$\frac{3}{4}$ in. x 0.015 in. thick	
	1 Electrician's Knife				
	1 Metal Tape			100 in. long	
	1 Hammer	HM-1			
	1 Shovel†	LC-19			
	1 Mattock†				
	1 fire Extinguisher				
	1 Ground Rod†				
1	Metal Tape				
1	Radio Set	SCR-610-()		1 ft. 4 $\frac{1}{2}$ in. x 1 in. x 11 $\frac{5}{8}$ in.	57
1	Chart (Operating instructions)			8 $\frac{7}{16}$ in. x 4 $\frac{1}{2}$ in. x $\frac{1}{32}$ in.	0.15
1	Right Side Antenna Stowage Rack (loaded)			7 ft. 7 $\frac{1}{4}$ in. x 1 ft. 4 $\frac{1}{2}$ in. x 1 ft. 2 $\frac{1}{2}$ in.	228
	(unloaded)			7 ft. $\frac{1}{4}$ in. x 1 ft. 6 $\frac{1}{2}$ in. x 1 ft. 7 $\frac{1}{2}$ in.	48
1	Left Side Antenna Stowage Rack (loaded)			8 ft. 9 in. x 1 ft. 4 in. x 1 ft. 2 $\frac{1}{2}$ in.	174
	(unloaded)			7 ft. $\frac{1}{4}$ in. x 1 ft. 5 in. x 1 ft. 6 $\frac{1}{2}$ in.	48

*Items mounted in the transmitter cabinet.

†Items mounted externally on trailer.

3. EQUIPMENT REQUIRED BUT NOT SUPPLIED.

a. For equipment required for the installation of radio set AN/CRN-2 but not supplied with it, see table 1-2.

TABLE 1-2.

EQUIPMENT REQUIRED BUT NOT SUPPLIED

Qty	Name of Unit	Army Type Designation	Navy Type Designation
1	Power Unit	PU-25/CRN	PU-25/CRN
1	Converter Unit	PU-15/CRN-2	PU-15/CRN-2

b. For equipment required for testing radio set AN/CRN-10 but not supplied with it, see table 1-3.

TABLE 1-3. TEST EQUIPMENT NOT SUPPLIED

Qty	Name of Unit
1	Weston Multi-meter 665 (or equivalent)
1	RCA Oscilloscope 152 (or equivalent)

4. DESCRIPTION OF MAJOR ASSEMBLIES.

(See figures 1-2 to 1-5.)

a. GENERAL.—Radio set AN/CRN-10 is designed to be air transportable. Aluminum is used wherever practicable. All cabinets, radiating antennas, masts, mast mounting brackets, etc., are made of aluminum except where steel is required for strength. The trailer

and trailer framework are fabricated of steel. The antenna array framework is made up of interlocking components which are disassembled and packed in antenna stowage containers for transport. All units which are likely to be damaged by vibration or shock are mounted on the trailer on cushioned shock mountings.

b. RADIO TRANSMITTER T-66/CRN-10.

(See figures 1-6 and 1-7.)

(1) The radio transmitter is mounted on the bed-plate and to the rear of the trailer. It is completely enclosed in a splash-proof, shock-mounted cabinet with removable hinged front and rear covers.

(2) The transmitter is composed of an upper section ("RADIO FREQUENCY SECTION") and a lower section ("POWER SUPPLY SECTION"). These sections are individually mounted on roller and slide-bar assemblies. Either section, when pulled out, becomes accessible for servicing or maintenance. The sections are provided with interlock safety switches to remove dangerous voltages from both when either is pulled out. Each section is provided with safety catches which, when depressed, permit full withdrawal of the section. If necessary, both sections may be completely removed from the cabinet by disconnecting a plug and interconnecting cable from the rear of the power supply section.

(3) The transmitter is ventilated by means of a blower mounted in the cabinet directly over the power supply section. Air is drawn in through a filter located in the center of the power supply section front panel and is expelled through filters located in louvres on both sides of the cabinet.



Figure 1-2. Radio Set AN/CRN-10—Set Up for Operation

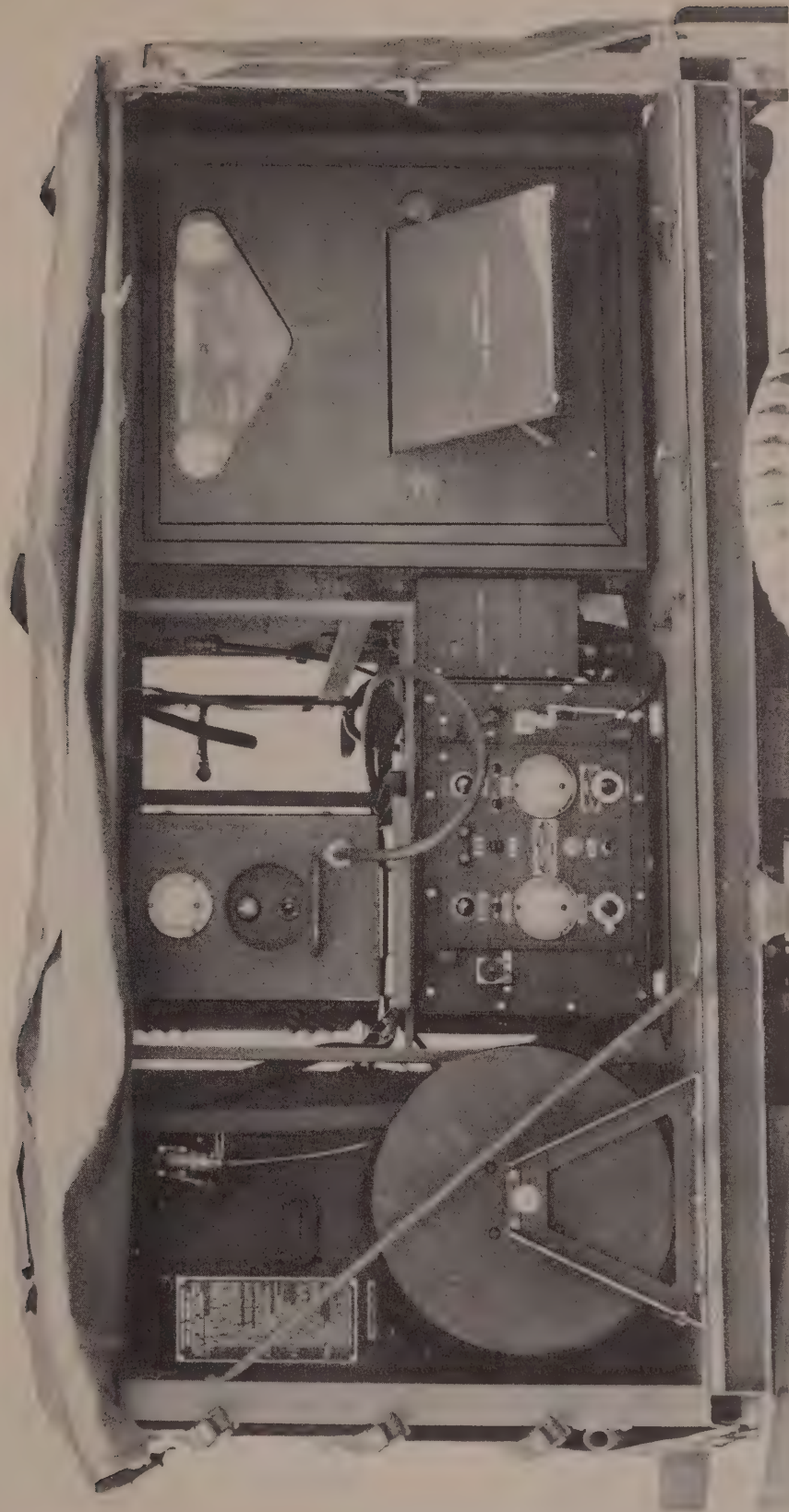


Figure 1-7A. Modulator MD-49/CRN-10 and Radio Transmitter
T-66/CRN-10—In Operating Position.

of the transmission line. The upper or head end of the transmission line is equipped with chucks to support two rod-type antenna sections (dipole antenna).

e. COURSE DETECTOR TS-179/CRN-10.

(See figures 1-13, 1-14, and 1-15.)

(1) The course detector is mounted for transport on a shock mounting base attached to the trailer bed-

plate at the right side of the modulator cabinet. When packed on the trailer, the course monitor is protected against damage by a shock absorbing mounting.

(2) The course detector is housed in a watertight aluminum cabinet. An untapped hole is centrally located at the rear of the bottom of the cabinet, which, in conjunction with a tapped hole centrally located on the upper half of the rear of the cabinet, is used to attach leg LG-16-B.

(3) A transmission line stack assembly is mounted on the top of the cabinet. The stack head consists of a polystyrene block assembly which supports the upper end of the transmission line. The upper or head end of the transmission line is equipped with chucks to support two rod-type antenna sections (dipole antenna).

f. RADIO SET SCR-610-()*

(1) This radio set is located on the bedplate of the trailer between radio transmitter T-66/CRN-10 and modulator and bridge MD-24/CRN-10.

(2) Radio receiver and transmitter BC-659-(), part of radio set SCR-610-A, is housed in a single metal case weather-proofed by the use of rubber and packing gaskets at all points where moisture might enter.

(3) Clips are provided on the sides of the case for fastening the receiver and transmitter to a battery case or power supply unit depending on which source of power is being used. Two brackets and two straps, for carrying the receiver-transmitter antenna when not in use, are located on top of the case. All operating controls are mounted on the front panel.

g. MODULATOR MD-49/CRN-10.

(See figures 1-15A and 1-15B.)

(1) The modulator is built on an aluminum chassis and panel assembly. The chassis slides on rails into a

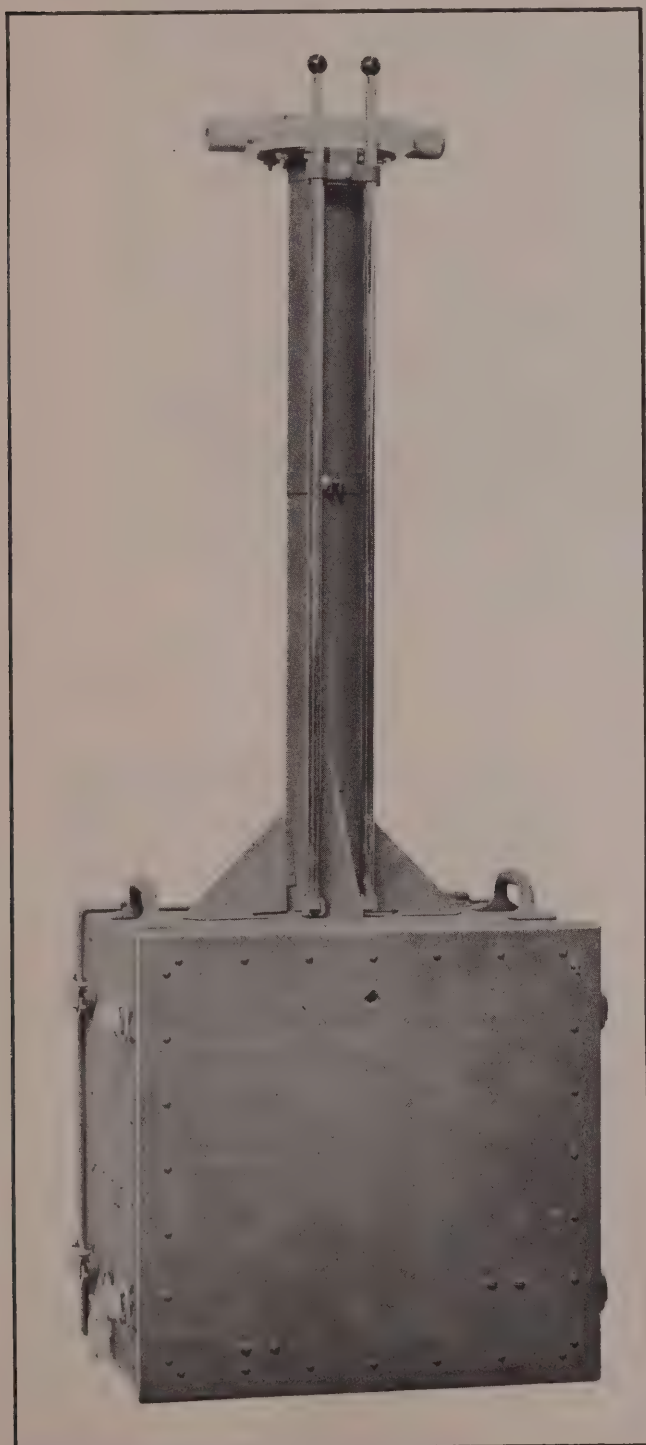


Figure 1-14. Course Detector TS-179/CRN-10—Rear View of Case

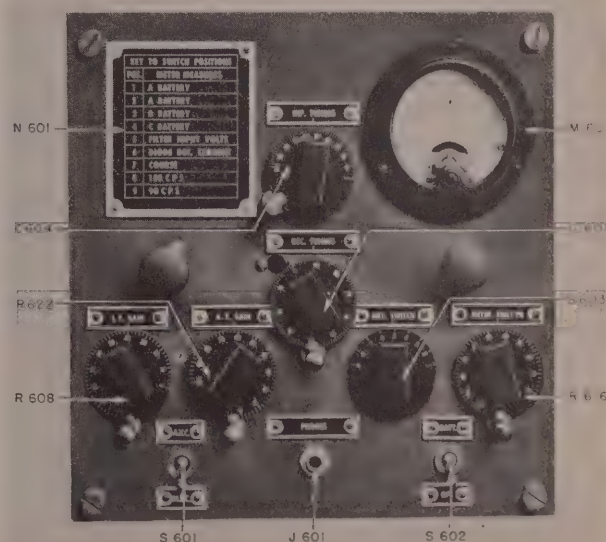


Figure 1-15. Course Detector TS-179/CRN-10—Front Panel View

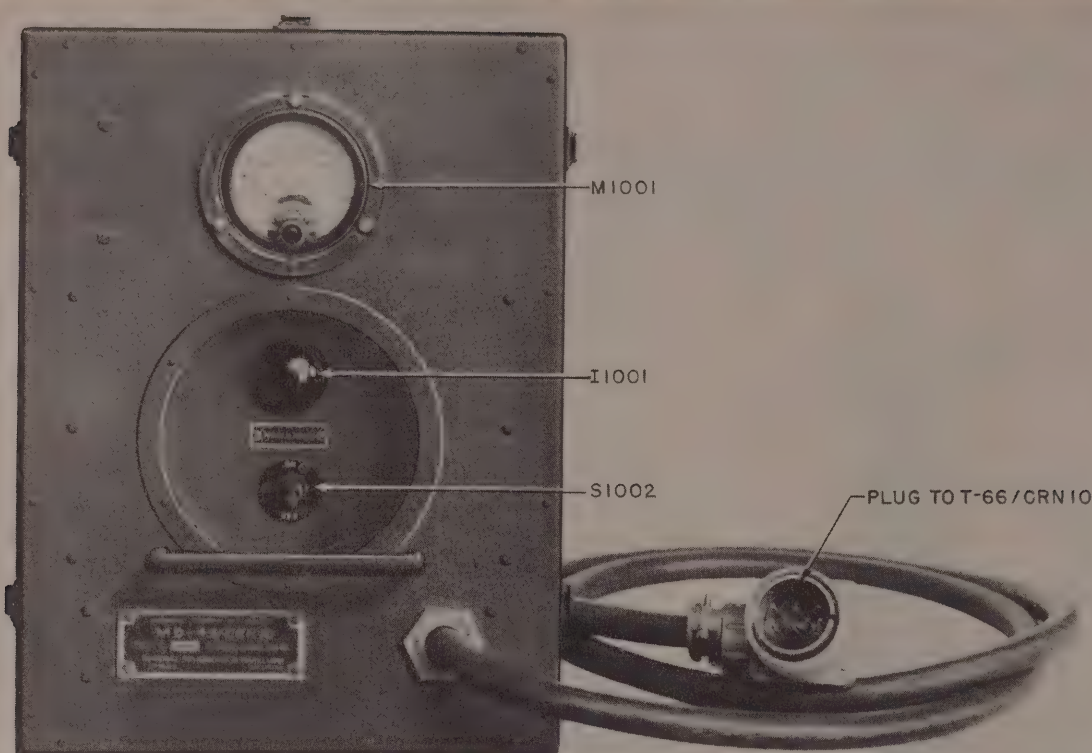


Figure 1-15A. Modulator MD-49/CRN-10—Front View

splash-proof, shock-mounted aluminum cabinet. Five catches hold the panel to the cabinet. Two carrying handles are provided on top of the cabinet. One handle on the panel simplifies removal of the chassis when the catches are released.

(2) On the panel are mounted a modulation meter and a switch and pilot light. In a lower corner of the panel is a bushing through which a 6-foot, 8-conductor cable passes. On the inside rear wall of the cabinet is mounted the male section of an interlock switch. (See fig. 15B.)

(3) The cabinet is constructed with louvres and baffles to provide adequate ventilation with maximum protection against rain and dust.

(4) During transit, the modulator is mounted on the left-hand side of the trailer bedplate between the front of Indicator ID-70/CRN-10 or ID-70A/CRN-10 and the outer edge of the trailer. When Radio Set AN-CRN-10 is in operation, this modulator is placed on the framework which holds Antenna Tuning Unit TN-71/CRN-10 during transit.

b INDICATOR ID-70/CRN-10 or ID-70A/CRN-10.
(See figure 1-16.)

(1) The indicator is housed in a watertight aluminum cabinet which is permanently mounted to the trailer chassis by means of a shock absorbing mounting.

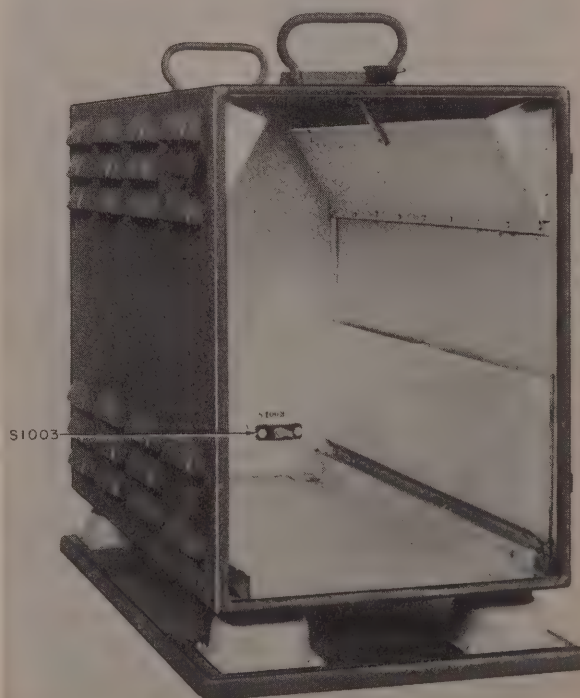


Figure 1-15B. Modulator MD-49/CRN-10—Interior View of Cabinet

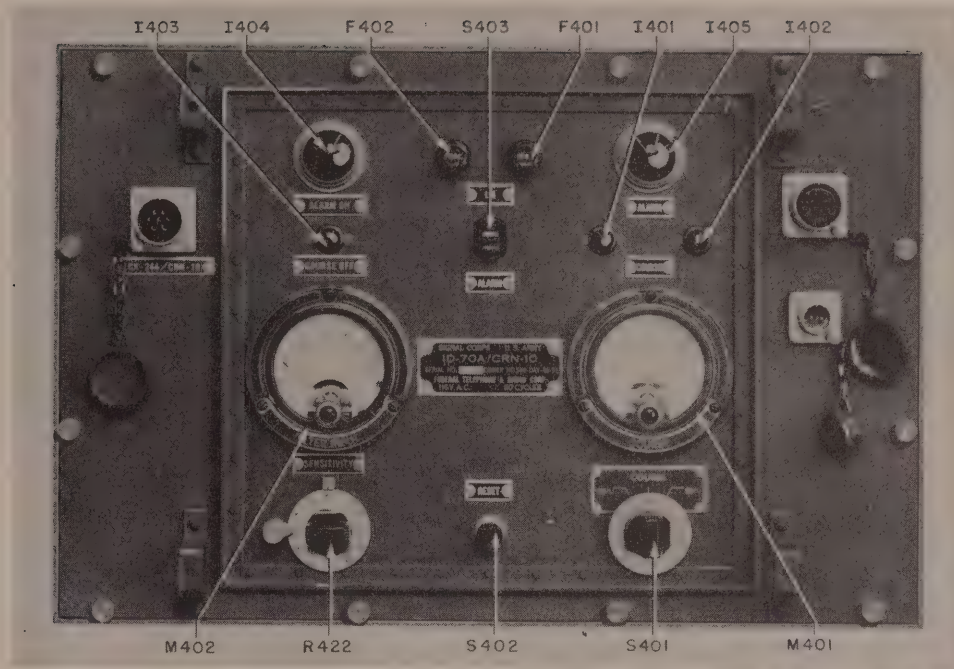


Figure 1-16. Indicator ID-70/CRN-10 or ID-70A/CRN-10—Front Panel View

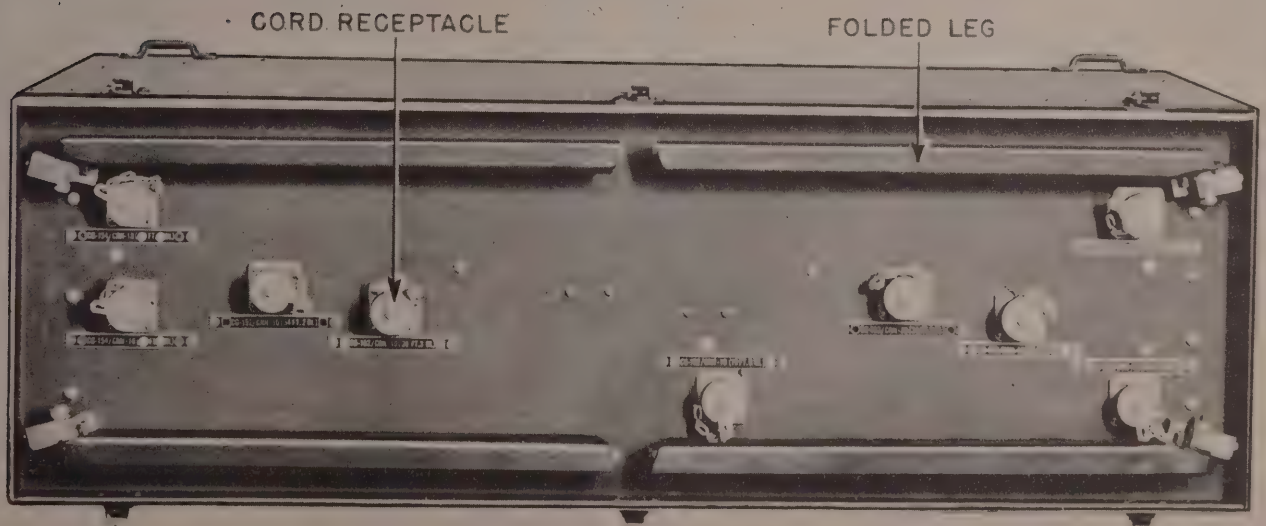


Figure 1-17. Antenna Tuning Unit TN-71/CRN-10—Bottom View

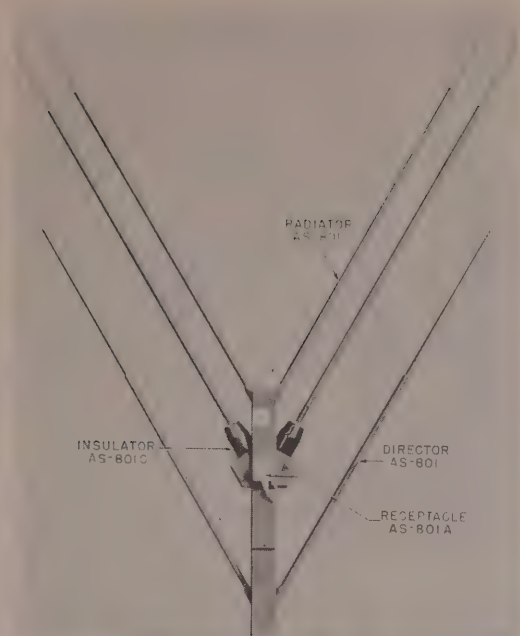


Figure 1-18. Antenna Assembly AS-155/CRN-10

(2) A detachable protective plastic panel is mounted over that portion of the front panel which contains the meters, lamps, and controls. The alarm bell is mounted on the outside of the rear panel of the cabinet.

i. ANTENNA SYSTEM AS-156/CRN-10.

(1) The antenna supporting structure is made up of a hollow wooden beam which, when erected, is supported by four "A" frame members of wood and aluminum. Two diagonal braces are provided to hold the structure in an upright position.

(2) The supporting structure is held down by eight anchor and chain assemblies. Seven brass antenna mast mounting plates are attached symmetrically along the top of the beam. Seven aluminum antenna masts are attached to these plates by means of wing bolts. (Two wing bolts are used for attaching each antenna.)

(3) Each antenna is electrically fed by a measured length of two-conductor transmission line cable. Seven cable tie down chain assemblies are provided to support the transmission line cable during periods of violent wind. (See figures 1-2 and 1-19.)

(4) Antenna beam sections, "A" frame sections, anchors, cord safety chains, and anchor chains are packed in the antenna stowage containers mounted on the top of the trailer.

(5) The antennas are mounted, for transport, in two antenna stowage racks attached to the trailer bed-plate in front and in back of the transmitter cabinet.

j. ANTENNA TUNING UNIT TN-71/CRN-10.

(See figure 1-17.)

(1) The antenna tuning unit is housed in a sheet aluminum box and mounted on the trailer framework



Figure 1-19. Mounting Frame MT-289/CRN-10

at the rear of the modulator cabinet. The top and four sides of the box form the cover which is attached to the base by six snap-type catches. A rubber gasket seals the cover. Two handles are fastened to the cover for carrying purposes. Four pivoted legs and nine color-coded type AN 3102-16S-5PT cord receptacles are recessed in the underside of the base.

(2) The electrical line matching elements are mounted on the top of the base and are permanently adjusted by the manufacturer. In the operating position, the unit is tied down by anchors and chains.

k. ANTENNA ASSEMBLY AS-155/CRN-10.—This antenna is a wideband folded dipole-antenna with director which operates on any of the specified frequencies without returning and radiates nearly 100 percent horizontally polarized energy in a substantially cardioid-type radiation pattern. Seven antennas are used. (See figure 1-18.)

l. MAST.—The mast is a 2-foot tubular aluminum structure with mounting flanges which mounts on the antenna array base. One antenna is mounted on each mast. Seven masts are used.

m. MOUNTING FRAME MT-289/CRN-10.—The mounting base consists of a hollow wooden trough approximately 41 feet in length (assembled) which is supported by four wooden "A" frames. The hollow wooden trough collapses into seven sections to facilitate transportation on trailer V-6/CRN-10. The seven masts are mounted at measured intervals along the hollow wooden trough. (See figure 1-19.)

n. TRIPOD LG-27-B AND LEG LG-16-B.

(1) The tripod is a standard surveyor tripod provided with stay-chains between legs used to support

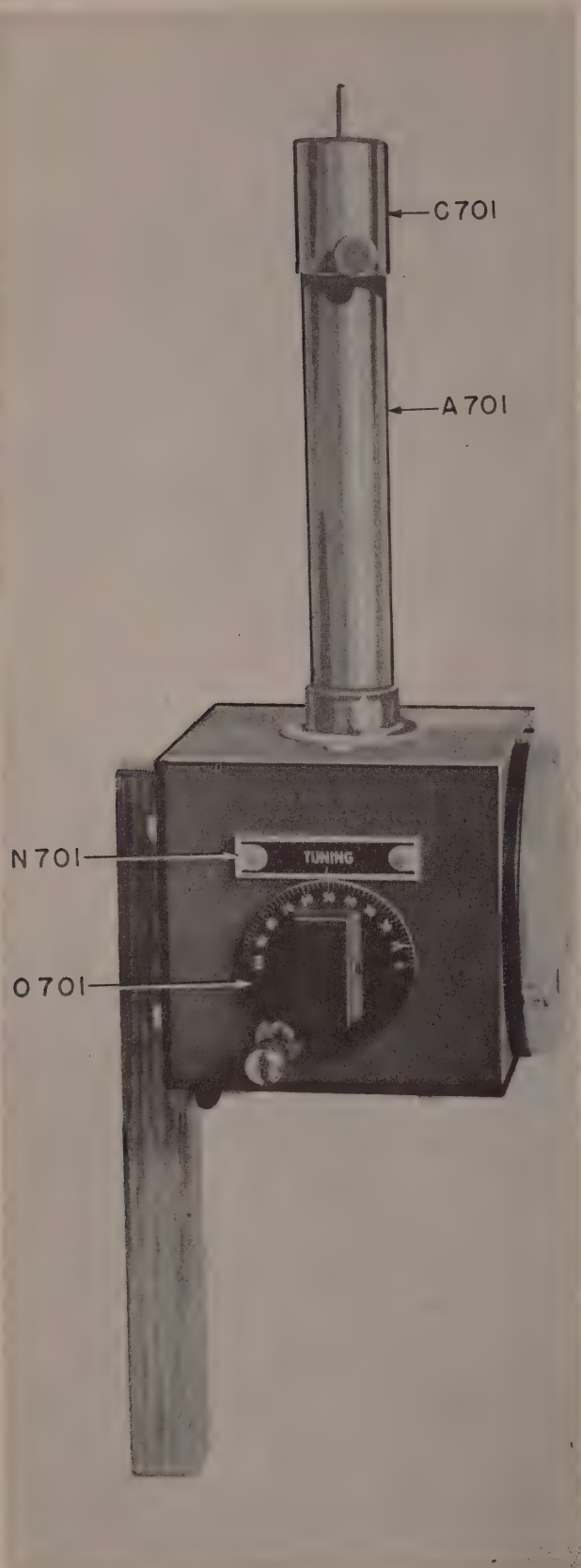


Figure 1-20. Voltmeter IS-176-B—Side View



Figure 1-21. Voltmeter IS-176-B—Mounted for Transport

course monitor TS-180/CRN-10. (See figure 1-12.) The anchor and chain are used to anchor the tripod. The tripod is strapped to the trailer framework at the front right corner adjacent to the course detector. The anchor and anchor chain are stored for transport in the antenna stowage containers on the top of the trailer.

(2) Leg LG-16-B is a staff which supports course detector TS-179/CRN-10 while readings are taken. It is attached to the course detector by a dowel and captive thumb screw. The leg is stored on the right side of the chassis of trailer V-6/CRN-10. (See figure 1-5.)

o. VOLTMETER IS-176-B.—The voltmeter is housed in a small metal case with a wooden handle and is mounted on a bracket on the inside wall of the modulator cabinet. The probe tip is located at the end of a short tubular assembly which is attached to the voltmeter case. (See figures 1-20 and 1-21.)

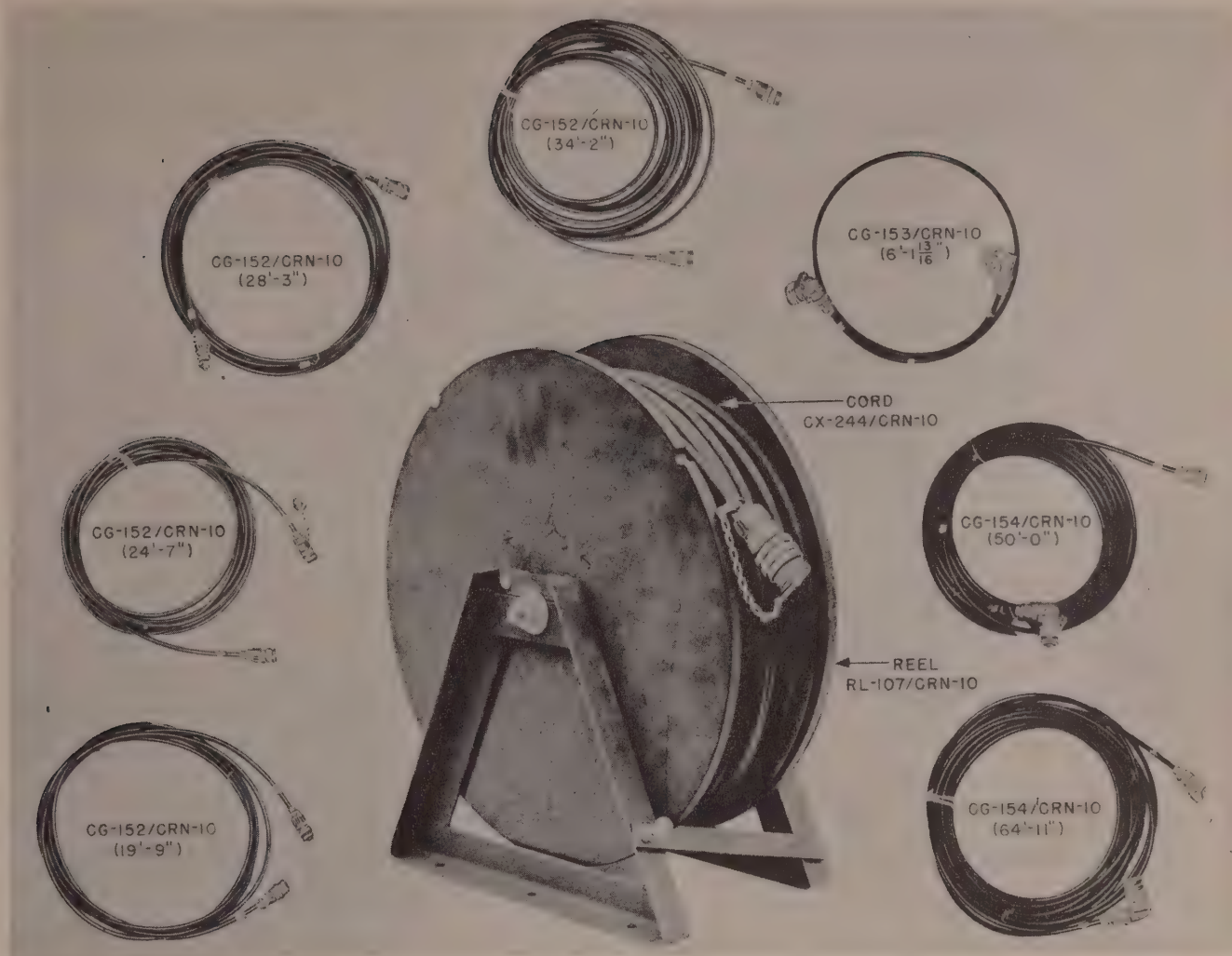


Figure 1-22. Radio Set AN/CRN-10—Interconnecting Cords

p. REEL ASSEMBLY RL-107/CRN-10.—The reel assembly is used for storing cord CX-244/CRN-10 during transit. This reel is made of wood and is mounted on a steel framework attached to the bedplate of the trailer on the left side of the modulator cabinet. (See figure 1-22.)

q. MOUNTINGS MT-226/CRN-10 AND MT-229/CRN-10.

(1) Mounting MT-226/CRN-10 is used for mounting course monitor TS-180/CRN-10 and mounting MT-229/CRN-10 is used for mounting course detector TS-179/CRN-10.

(2) The mountings are equipped with Lord type shock mounts and are provided for protection of the components during surface and air transport when mounted on trailer V-6/CRN-10.

r. OBSTACLE LIGHT MX-217/CRN-10.

(1) There are two obstacle lights which are supplied with the necessary cords to connect them to the transmitter junction box. The lights are mounted on a supporting framework attached to the trailer.

(2) Two black combat hoods, which are to be installed in place of the red plastic lenses, are supplied for use during blackouts.

(3) The obstacle light assembly is strapped on the top of the antenna stowage containers during transit.

s. CHART.—This operating instruction chart is mounted on the left side of the modulator cabinet over reel assembly RL-107/CRN-10, and lists the steps necessary for operating radio set AN/CRN-10.

t. INTERCONNECTING CORDS.—The cords listed in table 1-4 are used for interconnecting the major assemblies of radio set AN/CRN-10. (See figure 1-22.)

5. RANGE OF EQUIPMENT.

The range of radio set AN/CRN-10 is a function of the altitude of the receiving aircraft and is approximately 40 miles at an elevation of 2500 feet, 60 miles at 6000 feet, and 75 miles at 10,000 feet.

6. FREQUENCY COVERAGE.

The radio set has a frequency range of 108.3 to 110.3 megacycles.

TABLE 1-4. INTERCONNECTING CORDS OF RADIO SET AN/CRN-10

Number of Cords Required	Nomenclature of Cord	Connection Made		Length	Remarks	Storage Location
		From	To			
1	Cord CG-152/CRN-10	Antenna Tuning Unit TN-71/CRN-10	Carrier Antenna, Antenna Assembly AS-155/CRN-10	24' 7"	Radio Frequency Cable RG-22/U. Plug AN3106- 16S-5PT on both ends.	Stored in drawer type compart- ment under bed- plate at rear of trailer.
2	Cord CG-152/CRN-10	Antenna Tuning Unit TN-71/CRN-10	Sideband Antenna, Antenna Assembly AS-155/CRN-10	34' 2"		
2	Cord CG-152/CRN-10	Antenna Tuning Unit TN-71/CRN-10	Sideband Antenna, Antenna Assembly AS-155/CRN-10	28' 3"		
2	Cord CG-152/CRN-10	Antenna Tuning Unit TN-71/CRN-10	Sideband Antenna, Antenna Assembly AS-155/CRN-10	19' 9"		
1	Cord CG-153/CRN-10	Radio Transmitter T-66/CRN-10	Modulator and Bridge MD-24/CRN-10	6' 1 ³ / ₁₆ "	Radio Frequency Cable RG-22/U. Plug AN3108-22-8ST on both ends carries r-f energy from transmitter to modulator.	Permanently installed in operating position.
1	Cord CX-244/CRN-10	Course Monitor TS-180/CRN-10	Indicator ID-70/CRN-10 or ID-70A/CRN-10	225'	Seven-conductor cable#18AWG Plug AN3106-18- 9P on both ends. Supplies heater and plate power to course monitor.	Stored on Reel RL-107/CRN-10
1	Cord CG-154/CRN-10	Modulator and Bridge MD-24/CRN-10	Antenna Tuning Unit TN-71/CRN-10	47' 9"	Radio Frequency Cable RG-22/U. Plug AN3106-16S-5PT on one end. Plug AN3108-22-8ST on opposite end.	Stored in drawer type compart- ment under bedplate at rear of trailer.
1	Cord CG-154/CRN-10	Modulator and Bridge MD-24/CRN-10	Antenna Tuning Unit TN-71/CRN-10	47' 11"		

7. POWER CONSUMPTION AND OUTPUT.

a. Approximately 1 kilowatt of 60-cycle, single-phase power at 110 to 120 volts is required for the operation of all the assemblies of the radio set (with the exception of radio set SCR-610-()* and the obstacle lights). This power can be obtained from an external 110- to 120-volt, 60-cycle source; from an external 110/120-volt, 50-cycle source by using a 60-cycle converter unit PU-15/CRN-2 (refer to section II, paragraph 2d); or

can be supplied by power unit PU-24/CRN-10.

b. A 12-volt storage battery is required for the operation of radio set SCR-610-()* and for normal operation of the obstacle lights. The obstacle lights can also be operated from a 105-volt, d-c runway lighting system.

c. The radio-frequency power output of the radio set is approximately 35 watts under normal operating conditions.

so that the inter-communication side (radio set SCR-610-()*) is nearest the array and the trailer wheels are just back of the prolongation of the centerline. (See figure 1-4.)

(2) CONNECTIONS TO TRAILER V-6/CRN-10.

(a) Plug the straight connector, plug AN 3106-16S-5PT, of the carrier feeder cord (color-coded green, cord CG-154/CRN-10 [47' 9"]) into the carrier feeder input receptacle (color-coded green) in one bottom corner of the antenna tuning unit. Plug the angle end of plug AN 3108-22-8ST into the carrier output receptacle (color coded green) on the side of the modulator.

(b) Plug the straight connector, plug AN 3106-16S-5PT, of the sideband feeder cord (color-coded orange, cord CG-154/CRN-10 [47' 11"]) into the sideband feeder input receptacle (color-coded orange) in one corner of the bottom of the antenna tuning unit. (See figure 1-17.) Plug the angle end, plug AN 3108-22-8ST, of this cord into the sideband output receptacle (color-coded orange) on the side of the modulator. (See figures 2-17 and 2-18.) -

(3) POWER CONNECTIONS TO TRAILER
V 6/CRN-10.

CAUTION

Throw the junction box "POWER SUPPLY" switch to the "OFF" position and check the voltage of the power source before making any connections.

(a) When installing radio set AN/CRN-10, drive the ground rod which is packed with leg LG-16-B into the ground at a point on the right-hand side of the trailer, adjacent to radio set SCR-610-()*. Uncoil the trailer ground lead and clamp the bare end of the wire to the ground rod.

(b) Connect the power source to the transmitter junction box either through the 25-foot cable, or directly to the terminals on the front panel.

(c) Power unit PU-25/CRN-2 supplies 115-volt, 60-cycle alternating current for equipment operation, and 12-volt direct current from two 6-volt storage batteries for the emergency operation of the obstacle lights and the communications radio set SCR-610-()*. When this power unit is to be used, proceed as follows:

1. Insert the plug of the 25-foot cord into the receptacle provided on the power unit. Twist clockwise to lock.

2. Check the obstacle lights to make sure that 12-volt bulbs are installed.

WARNING

Connect the larger plug contact on the power input cord (junction box to power unit PU-25/CRN) which is grounded to radio set AN/CRN-10 trailer chassis, to the polarized receptacle of the power unit. This is necessary in order that the trailer chassis of the radio set can be at the same potential as the power unit trailer chassis.

(d) When using the external 115-volt, 60-cycle source of power, there will be no storage battery supply for the operation of the obstacle lights or for radio set SCR-610-()*. When using this source of power, proceed as follows:

1. Replace the 12-volt obstacle lights with 105-volt lights.

2. Open the lower door of the junction box marked "TERMINALS" and throw the "OBSTACLE LIGHTS" switch to the "115-VOLT A.C." position.

3. Attach cables from the 115-volt, 60-cycle supply to the terminals on the junction box marked "115-VOLT A.C."

WARNING

The "EXTERNAL" terminals of the junction box are internally connected so that the terminal marked "A.C.-GND." is grounded to the trailer chassis of radio set AN/CRN-10. Therefore, connect the "A.C.-GND" terminal to the "GROUNDED" side of the "EXTERNAL" power source.

(e) When using an external 115-volt, 50-cycle power supply, follow the same procedure described in preceding subparagraph (c). Make the following changes to provide for the use of converter unit PU-15/CRN-2 (50- to 60-cycle frequency changer):

IMPORTANT

Do not attempt to operate radio set AN/CRN-10 from a 115-volt, 50-cycle source unless converter unit PU-15/CRN-2 is used.

1. Remove plug AN-3108-22-8S on the modulator end of the 115-volt, a-c power cord from the power input receptacle of the modulator.

2. Attach this plug to the cord to the 115-volt, 50-cycle side of the rotary converter.

3. Attach the cord from the 115-volt, 60-cycle side of the rotary converter to the power input receptacle of the modulator.

IMPORTANT

Proper rate of modulation of the radio-frequency energy is dependent on the synchronous speed of the modulator motor making it mandatory that the power supply is 115-volt, 60-cycle. If 115-volt, 50-cycle power were applied to the modulator motor, its speed would be lower and the radio-frequency energy would not be modulated at a high enough rate. This would mean that all detecting equipment using 90- and 150-cycle band-pass filters would not receive the proper audio frequencies and as a result would not pass the signal to the remainder of the circuit. Such modulator operation would result in the incorrect operation of the following items of associated equipment: course detector TS-179/CRN-10, indicator ID-70/CRN-10 or ID-70A/CRN-10 and aircraft receivers.

(f) The 105-volt, d-c runway power source may be used to operate the obstacle lights. Proceed as follows:

1. Attach the power source to the junction box terminals marked "105 VOLTS D.C."
2. Insert 105-volt bulbs in the obstacle light sockets.
3. Turn "OBSTACLE LIGHTS" switch to the "RUNWAY SOURCE" position.

WARNING

Do not use direct current to operate any other part of the equipment except the obstacle lights.

c. SETTING UP EQUIPMENT FOR REMOTE OPERATION.

For remote operation of the equipment it is necessary to have a source of approximately 48 volts dc in series with a single-pole, single-throw switch at the remote point.

- (1) Throw transmitter "FILAMENT" switch to "OFF."
- (2) Throw transmitter "PLATE" switch to "ON."
- (3) Open the transmitter junction-box door marked "TERMINALS" and connect the remote line to the terminals marked "48 V. D. C. EXT."
- (4) Throw the junction-box "POWER SUPPLY" switch to "GENERATOR" or "EXTERNAL," depending upon the source of power available. When the "POWER ON" lamp lights, the equipment is ready for remote operation.
- (5) With the equipment set up as above, in order to place the equipment in operation from remote location, close the single-pole, single-throw switch at the remote point.

d. OPERATION FROM 50-CYCLE SUPPLY.—A 50- to 60-cycle converter unit PU-15/CRN-2 is needed in order to supply power at 60 cycles to the motor of modulator and bridge MD-24/CRN-10.

- (1) Remove the cable from the "60-CYCLE POWER INPUT" receptacle of the modulator, and attach the cable to cord CX-345/CRN-10.
- (2) Connect the lugs on the other end of cord CX-345/CRN-10 to the "MOTOR" terminals of the frequency converter.
- (3) Attach cord CX-346/CRN-10 to the "60-CYCLE POWER INPUT" receptacle of the modulator.
- (4) Connect the lugs of cord CX-346/CRN-10 to the "GENERATOR" terminals of the frequency converter.
- (5) See that the motor is strapped for 115 volts.
- (6) Connect the terminals of the 50-cycle power source to the "115 V. A. C. EXT." terminals on the transmitter junction box.
- (7) Throw the junction-box "POWER SUPPLY" switch to "EXTERNAL."

e. INSTALLATION OF MODULATOR MD-49/CRN-10.

(1) INSTALLATION—Remove Modulator MD-49/CRN-10 from its transport position (in front of Indicator ID-70/CRN-10 or ID-70A/CRN-10) and place it on the antenna tuning unit supporting framework. Insert the interconnecting cable plug into the receptacle in the left hand side of Radio Transmitter T-66/CRN-10.

Throw Modulator MD-49/CRN-10 "ON-OFF" switch to the "OFF" position when making installation checks. Keep this switch in the "OFF" position until station identification modulation is required.

Note

When the modulator cable is removed from the receptacle on Transmitter T-66/CRN-10, the receptacle *must always* be covered with the special cap provided; otherwise the transmitter cannot operate.

(2) ADJUSTMENT OF KEYER.—When identification letters for the installation have been assigned, set up the keyer cam as follows:

- (a) Remove the modulator chassis from the cabinet.
- (b) Remove the black cover from keyer S-1001 by means of the two thumbscrews. (See fig. 1-15B.)
- (c) Use the tool clipped inside the cover for moving the required segments in and out.
- (d) Progressing around the cam in a clockwise direction (the cam rotates counterclockwise) from the space with no segments, move one segment out for each dot and four adjacent segments for each dash. (See fig. 2-18A.)
- (e) For each space between dots and dashes of a letter, leave in one segment and for the interval between the two letters of the identification signal, leave four segments in.
- (f) The space between identification signals will vary with the letters used. Signals made up of two short characters may be repeated several times in one cam revolution. Space the identification signals so that at least 8 segments and not more than 30 segments are down, and so that these spaces are equal.

f. ADJUSTMENT OF RADIO TRANSMITTER T-66/CRN-10.

Note

Throw the "ALARM" switch on indicator ID-70/CRN-10 or ID-70R/CRN-10 to the "OFF" position to prevent the alarm bell from ringing during the adjustment of the transmitting equipment.

(1) TO CHANGE CRYSTAL.—The transmitter is supplied with six crystal units of different frequencies. (See table 6-2.)

The crystal identification letter (for crystal unit DC-17-A only) is visible through a small circular win-

dow¹ in the panel of the "RADIO FREQUENCY SECTION" of radio transmitter T-66/CRN-10. Check this letter or crystal frequency to see that the proper crystal is being used. In order to change crystals, proceed as follows:

(a) Throw "POWER SUPPLY" switch to "OFF" position.

(b) Swing open the front cover of the transmitter after unfastening the three catches on one side; or remove the cover by unfastening the catches on both sides. Unscrew the two knurled knobs of the "RADIO FREQUENCY SECTION." (See figure 1-6.)

(c) Depress the spring-stop on the right side of the chassis, and pull out the section about half-way. The five spare crystals are mounted in sockets along the left side of the chassis.

(d) Select the desired crystal and exchange it with the one in the operating socket (front, center).

(e) Replace the section and tighten the screws.

Note

The transmitter must be returned after changing crystals.

(2) TURNING ON RADIO TRANSMITTER T-66/CRN-10.—Check to see that a source of 115-volt, 60-cycle power is properly connected to the junction box attached to the left-hand side of the transmitter cabinet.

(a) Open the upper door (marked "POWER AND OBSTACLE LIGHT SWITCHES") of the box by loosening the two captive screws. (See figures 1-8 and 1-9.)

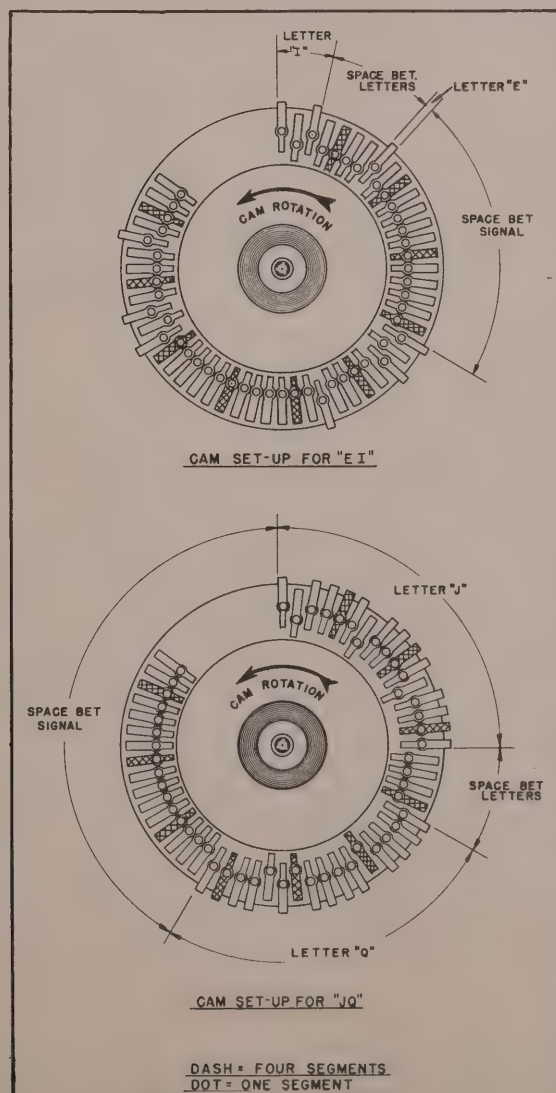
(b) Throw the "POWER SUPPLY" switch to "GENERATOR" if the power is obtained through the a-c cable from power unit PU-25/CRN. Throw the "POWER SUPPLY" switch to "EXTERNAL" if power is obtained through the "115 V. A. C. EXT." terminals on the front of the junction box. The amber "POWER ON" lamp will light.

(c) Throw the transmitter "FILAMENT" switch to "ON." The green lamp will light. (See figure 1-7.)

(d) Throw the transmitter "PLATE" switch "ON." The red lamp should light 45 seconds after the green lamp lights.

(3) TUNING RADIO TRANSMITTER T-66/CRN-10.—The transmitter will not require retun-

Figure 2-18A. Modulator MD-49/CRN-10—Cam Setups



ing unless the crystal is changed. If a crystal is changed, proceed as follows:

(a) Turn the "TUNING INDICATOR SWITCH" to position "3."

(b) With a screw driver loosen the locking screw on the control marked "XTAL OSC" and rotate the control for a maximum reading on the "TUNING IND." meter.

(c) Turn the "TUNING IND. SWITCH" to position "4."

(d) Unlock the control marked "1ST. MULT. PL." and rotate for a maximum reading on the "TUNING INDICATOR" meter.

(e) Turn the "TUNING IND. SW." to position "5."

(f) Unlock the control marked "2ND MULT. PL." and rotate for a maximum reading on the "TUNING IND" meter.

(g) Turn the "TUNING IND. SW." to position "6."

(h) Unlock the control marked "PA. PLATE" and rotate for a maximum reading on the "R.F. OUTPUT" meter. "TUNING IND" meter will indicate approximate minimum.

(i) Turn the "TUNING IND. SW." to position "7" and check the setting of the "PA PLATE" control.

(j) Check settings of all controls by turning the "TUNING IND. SW." to the proper position for each check.

(k) Check readings in positions "3" through "10" against the values listed in the "TUNING INDICATOR CHART."

(l) Lock all controls.

g. ADJUSTMENT OF THE COURSE.

(1) OPERATION OF COURSE DETECTOR TS-179/CRN-10.

(a) Remove the course detector from its shock-mounting by unfastening the two catches on the sides of the cabinet.

(b) Mount the detector on leg LG-16-B by engaging the pin on the leg bracket with the hole in the bottom of the detector cabinet. Attach the leg to the back of the cabinet with the captive screw provided. (See figure 1-14.)

(c) For adjustment purposes, set up the detector near the trailer.

(d) Raise the front cover.

(e) Throw the right-hand toggle switch to "BATT."

Note

Check the condition of the batteries by observing meter readings with the "MET. SWITCH" in positions "1," "2," "3," and "4." If the meter reads below "70" at any one

of these positions, replace the battery which is low.

(f) Turn "MET. SWITCH" to position "6."

(g) Throw the "A.V.C.-M.V.C." toggle switch to "A.V.C."

(h) Release the dial lock on the "OSC. TUNING" control and rotate the dial for a maximum reading on the meter. (See figure 2-19.)

(i) Release the dial lock on the "INP. TUNING" control and rotate the dial for a reading of about "100" on the meter.

(j) Readjust the "OSC. TUNING" control for a maximum meter reading.

(k) Lock both dials and turn the battery switch off.

(l) Carry the detector to a point about 400 feet in front of the antenna array on the center line of the runway and set it up with its back panel nearest the array. *The operator must face the antenna array.* Attach the antennas and extend them to full length.

(m) Turn the battery switch on.

(n) Using the "INP. TUNING" control, bring the meter reading to "70" ("MET. SWITCH" in position "6").

(2) COURSE LOCATION.

(a) Turn the "MET. SWITCH" to position "5." Adjust the "A.F. GAIN" control for a meter reading of "70." Turn "MET. SWITCH" to position "7." If the meter does not read "0," move the detector in the direction of the needle deflection.

Note

When the meter reads "0," the instrument is on course. When the detector is "OFF COURSE" the needle must point toward the course. If it does not do this, check the connections of the r-f cords.

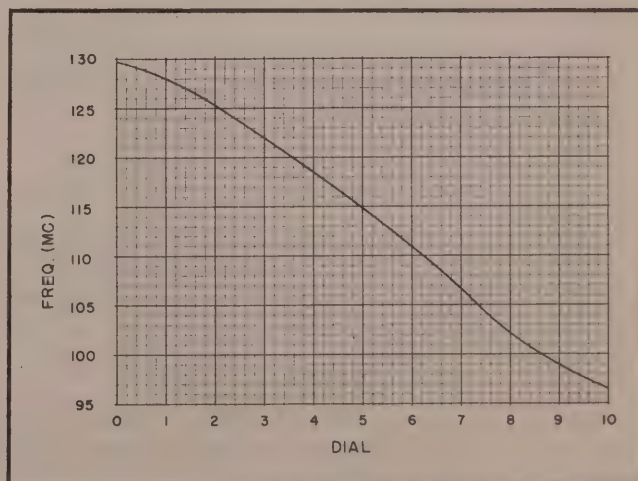


Figure 2-19. Course Detector TS-179/CRN-10—Clearance and Sharpness Chart

(b) Have one man hold the course detector in the position where its meter reads "0." Have another man stand 20 feet behind the antenna mounting frame and sight by eye so as to determine the line which passes through the center antenna of the antenna array and the center of the course detector. This line is the course.

(c) Align the course so that it falls on the center of the runway at the approach end (the end where airplanes make contact with the ground). To do this, shift the left end of the antenna array forward to move the course to the right, or shift the left end of the antenna array backward to move the course to the left.

(3) CLEARANCE CHECK.

(a) To measure clearance, turn the "MET. SWITCH" to position "8" and observe the meter reading.

(b) Then switch to position "9" and observe the reading.

(c) Adjust the "MET. MULTPR." control to bring the larger reading to "100."

(d) Turn the "MET. SWITCH" to the position at which the smaller reading was obtained, and note the new reading. The ratio of 100 to this reading is a measure of the clearance at the detector location. A clearance calibration curve is located inside the front cover of the instrument. (See figure 2-19.)

Note

The setting of the "MET. MULTPR." control must remain fixed when readings in positions "8" and "9" are compared. The meter must always read "70" with the "MET. SWITCH" in position "5" when making clearance or course measurements.

(4) INVESTIGATION OF THE RADIATION PATTERN.—After the desired adjustment of the course is obtained, carry course detector TS-179/CRN-10 completely around the antenna array at a distance of at least 200 feet from the latter. At each 10-degree interval, set up the course detector and proceed as follows:

(a) After the course detector is properly tuned, and with the "MET. SWITCH" on position "6," perform the following:

1. Adjust "INP. TUNING" control until the meter reads "70."
2. Turn "MET. SWITCH" to position "5."
3. Adjust "A.F. GAIN" control until the meter again reads "70."
4. Turn the switch to positions "8" and "9."
5. Adjust "MET. MULTPR." control until the larger of the two readings obtained in these switch positions is exactly 100 microamperes.

Note

If the smaller deflection is more than 55 microamperes a low clearance exists, indicating that either the system is out of adjustment, or a neighboring reflecting object is producing some undesired re-radiation. If the smaller deflection is less than 55, the system will be in normal operating condition.

(b) Check the course sharpness by positioning the course detector 1 degree off course (42 inches off course at a distance of 200 feet from truck) and repeat the above procedure. Satisfactory sharpness is indicated if, with the "MET. SWITCH" on positions "8" and "9," one reading is 100 and the other is less than 80. Repeat the measurement at a point 1 degree on the other side of the course. If the smaller of the two readings is greater than 80 at either location, the equipment is not operating properly.

(5) ANCHORING ANTENNA ARRAY.—Anchor the antenna array to insure against movement during high wind conditions. Set anchors in the ground at points as indicated by figure 8-10 and in accordance with the following procedure:

(a) Remove anchors, chains, and ground breaking pins from the antenna stowage containers.

(b) Drive anchor into ground with Hammer HM-1.

(c) Using anchoring chain bracket, hook the "S" hook nearest the turnbuckle in the hole of the "A" frame anchoring bracket. Pass the "S" hook on the other end of the chain through the anchor eye and hook back on itself to take up most of the slack chain. Twist the turnbuckle to make the chain taut. Anchor all "A" frames in a similar manner. Anchor the antenna tuning unit in the same way, securing the chains to the carrying handles.

b. SETTING UP COURSE MONITOR TS-180/CRN-10. (See figure 1-12.)—After the localizer course has been established, set up course monitor as follows:

(1) Unreel cord CX-244/CRN-10. (See figures 1-4 and 1-22.)

(2) Extend the cord along the ground under the antenna array on front course. This is the course monitor position.

(3) Connect the cord to the socket on the left-hand side of the front panel of indicator ID-70/CRN-10 or ID-70A/CRN-10. (See figure 1-16.)

(4) On the indicator, set the "SENSITIVITY" dial between 3 and 5, set "COURSE" switch to mid position and set the "ALARM" switch in the "OFF" position.

(5) Obtain one of the anchors and the tripod anchor chain from antenna stowage containers.

(6) Remove the tripod from its storage place on the trailer. (See figure 1-5.)

(7) Carry the course monitor, the tripod, and the anchor and chain to the course monitor position. (See figures 1-2 and 2-3.)

(8) Extend the tripod legs as far as the stops will permit and clamp the legs with the thumb screws provided.

(9) Spread the tripod legs as far as the retaining chains will permit and set up the tripod.

(10) Remove the protective cover from the tripod head and screw the tripod into the ring on the bottom of the course monitor.

(11) Face the front of the course monitor toward the antenna array.

(12) Connect the straight connector on the end of cord CX-244/CRN-10 to the socket on the bottom of the course monitor.

(13) Remove the antenna rods from their storage clips on the course monitor.

(14) Extend the antenna rods as far as they will go and secure them in the chucks provided on the top of the course monitor. (See figure 1-12.)

(15) Remove the front cover of the course monitor. (See figure 1-11.)

(16) Press the push-button marked "TUNING" and slowly vary the "DETECTOR TUNING" dial for maximum deflection on the "COURSE METER."

(17) Lock the "DETECTOR TUNING" dial after tuning is completed. (See figure 2-20.)

(18) Release the "TUNING" push-button and read the "COURSE" meter. If the "COURSE" meter does not read "0," the course monitor, including the tripod will have to be positioned until the meter reads "0."

(19) After the course monitor is properly positioned, anchor it in place by securing the chain which hangs from the head of the tripod with an anchor, a sandbag, or some other heavy weight.

(20) Replace the front cover of the course monitor.

i. ADJUSTING INDICATOR ID-70/CRN-10 or ID-70A/CRN-10. (See figures 1-4 and 1-16.)—After course monitor TS-180/CRN-10 has been adjusted, adjust the indicator as follows:

(1) Remove the protective cover from the indicator.

(2) Adjust the "SENSITIVITY" dial to give a reading on the red index mark on the "FILTER INPUT" meter. (See figure 1-16.)

(3) Throw the "ALARM" switch to "ON."

(4) Replace the protective cover on the indicator.

j. SETTING UP OBSTACLE LIGHTS.—Remove the obstacle-light assembly from the top of the trailer and insert the standard in the socket provided at the right-rear corner of the trailer. (See figure 1-2.) Connect

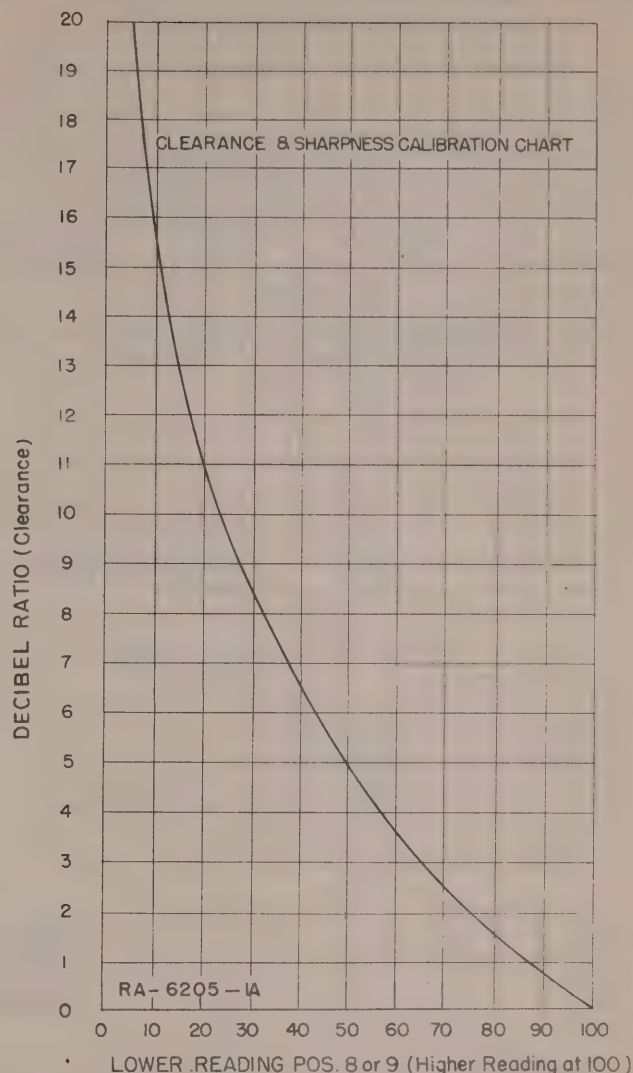


Figure 2-20. Tuning Chart for Course Monitor TS-180/CRN-10

the cord to the similar cord extending from the transmitter junction box.

(1) CONNECTIONS FOR OPERATION FROM 115-VOLT, A-C SOURCE.

(a) Remove the red lenses and check to see that 105-volt bulbs are inserted in the sockets.

(b) Throw the junction box "POWER SUPPLY" switch to "GENERATOR" if power is obtained through the junction box a-c cable; or to "EXTERNAL," if the power source is connected to the "115 V.A.C. EXT" terminals on the front of the junction box.

(c) The "POWER ON" lamp will light when the proper connection is made.

(d) Turn the "OBSTACLE LIGHTS" switch to the "115 V.A.C." position. It will be necessary to depress the safety catch to do this.

**(2) CONNECTIONS FOR OPERATION
FROM 12-VOLT BATTERY.**

(a) Turn "OBSTACLE LIGHTS" switch "OFF."
Insert 12 8-volt bulbs in sockets.

(b) Connect the lugs of the 25-foot cord attached to the junction box to the battery terminals of power unit PU-25/CRN. Observe correct polarity.

(c) Turn "OBSTACLE LIGHTS" switch to the "BATTERY" position. The "POWER SUPPLY" switch may be left in any position.

**(3) CONNECTIONS FOR OPERATION
FROM 105-VOLT, D-C AIRPORT
RUNWAY SUPPLY.**

(a) Insert 105-volt bulbs in the sockets.

(b) Connect the 105-volt source to the junction box terminals marked "105 V.D.C. EXT."

(c) Turn the "OBSTACLE LIGHTS" switch to the "RUNWAY SOURCE" position. It will be necessary to depress the safety catch to do this.

Note

The "POWER SUPPLY" switch may be left in any position.

**3. AFTER-INSTALLATION CHECK OF
RADIO SET AN/CRN-10.**

The relay control circuits of this equipment are so

arranged that the equipment is automatically placed in full operation 60 seconds after the "POWER SUPPLY" switch has been thrown to either "GENERATOR" or "EXTERNAL" depending upon the source of power available. One minute after the "POWER SUPPLY" switch has been thrown to the "GENERATOR" position, check for the following indications of operation:

a. The amber pilot light on the transmitter junction box is "ON."

b. The red and green pilot lights on transmitter panel are "ON."

c. The green pilot light, "ALARM ON," located on the panel of the indicator box is "ON." All other pilot lights on this unit are "OUT."

d. The red modulator light is "ON."

e. The "COURSE" meter on the indicator box reads center scale (i.e., zero).

f. The needle of the "FILTER INPUT" meter of the indicator box reads at red index mark at 1 on the scale.

4. DISMANTLING THE EQUIPMENT.

An exact reversal of the steps taken to assemble the equipment will safely dismantle it. In repacking the trailer, see figures 2-5 to 2-9.

**SECTION III
OPERATION****1. OPERATION OF RADIO SET AN/CRN-10.****a. TO START THE EQUIPMENT.****(1) OPERATION FROM POWER UNIT
PU-25/CRN.****Note**

Complete instructions for the operation of the power unit are given in the *Handbook of Maintenance Instructions for Power Unit PU-25/CRN*.

Open the door of the junction box and throw the "POWER SUPPLY" switch to "GENERATOR."

(2) OPERATION FROM 115-VOLT, 50- OR 60-CYCLE, A-C SOURCE.—Open the door of the junction box and throw the "POWER SUPPLY" switch to "EXTERNAL."

b. OPERATION OF OBSTACLE LIGHTS.**(1) OPERATION FROM BATTERY SUPPLY.****Note**

Check voltage rating of light bulbs in obstacle lights to make certain that it is 12.6 volts.

Open the door of the junction box and turn the "OBSTACLE LIGHTS" switch to "BATTERY" position. The obstacle lights will light.

**(2) OPERATION FROM 105-VOLT, D-C
RUNWAY SUPPLY.****CAUTION**

Check voltage rating of light bulbs in obstacle lights to make certain that it is 105 volts.

Open the door of the junction box and turn the "OBSTACLE LIGHTS" switch to "RUNWAY SOURCE." The obstacle lights will light.

c. TO STOP THE EQUIPMENT.**(1) USING POWER UNIT PU-25/CRN.**

(a) Throw the "POWER SUPPLY" switch to "OFF."

(b) Press the "STOP" button on power unit PU-25/CRN.

(2) USING EXTERNAL 115-VOLT, 50- OR 60-CYCLE SUPPLY.—Throw the "POWER SUPPLY" switch to "OFF."

2. OPERATION OF RADIO RECEIVER AND TRANSMITTER BC-659-()*.

Note

Radio receiver and transmitter BC-659-()*
is part of radio set SCR-610-()*.

a. TO START THE EQUIPMENT.

(1) Turn the "VOLUME" control knob fully clockwise.

(2) Turn the "METER" switch to "OPER."

(3) Turn the channel selector control marked "CHAN." to the channel on which communication is

to be made. Listen for the station with which communication is desired.

(4) Regulate the volume control to the desired level.

(5) To transmit, press the switch on the microphone and speak into it clearly. Release the switch when transmission is complete.

b. TO STOP THE EQUIPMENT.—To turn the radio set off, turn "VOLUME" control to the "OFF" position.

CAUTION

Do not make any other adjustments during operation, except as instructed in this section.

SECTION IV THEORY OF OPERATION

1. GENERAL.

(See figure 4-1.)

a. Radio set AN/CRN-10 is designed to radiate two modulated overlapping field patterns. The intersection of these field patterns provides a region of characteristic sound which can be received by aircraft radio equipment and used as the localizer beam for an airport runway. The radio set consists of a radio transmitter, a mechanical modulator, an identification modulator, an antenna array, and the necessary controls and power supply.

b. The radio-frequency power output of radio transmitter T-66/CRN-10 is divided into two equal portions by modulator and bridge MD-24/CRN-10 and is modulated by the blocking or reflection type of modulations. Each portion of the radio-frequency energy is modulated sinusoidally, one at a frequency of 90 cycles per second and the other at 150 cycles per second. After modulation, the two portions of the power are combined in a bridge circuit and fed to the antenna system.

c. Radio set AN/CRN-10 is designed for operation on any output frequency between 108.3 and 110.3 megacycles. Six crystal units DC-17-A are supplied with the transmitter for operation on the assigned instrument landing frequencies within the specified band. (See table 6-2 for crystal and output frequencies.)

d. The antenna system radiates two radio-frequency field patterns that intersect along the centerline on the runway of the airport. A course monitor is set out on the centerline of the runway and sends back to an indicator box a portion of the energy received from the two field patterns. The indicator box shows by visual and audible alarm circuits whenever there is an unbalance or decrease in signal. The course detector is a portable receiver that is used to investigate the field patterns of the antenna system.

2. DETAILED CIRCUIT DESCRIPTION.

(See figure 8-30.)

a. RADIO TRANSMITTER T-66/CRN-10.

(1) GENERAL CHARACTERISTICS.—This radio transmitter (see figure 8-23) is a generator of radio-frequency energy housed in a weather-proof cabinet and consists of two sections, a "RADIO-FREQUENCY SECTION" and a "POWER-SUPPLY SECTION."

(2) "RADIO-FREQUENCY SECTION." — This section (see figure 4-2) is a chassis which contains the r-f components of the transmitter. The r-f circuit consists of a crystal-oscillator-tripler stage, a first multiplier (tripler) stage, a second multiplier (doubler) stage, and a straight power amplifier stage. The six quartz crystals operate at the frequencies listed in table 6-2. The crystal frequency is tripled in the oscillator-tripler plate circuit to supply the input to the first multiplier. In the first multiplier plate circuit, the frequency is again tripled. In the plate circuit of the following second multiplier, the frequency is doubled. Thus, the transmitter output frequency is 18 times the crystal frequency. The power amplifier employs pentode tubes in a push-pull class C circuit. No neutralization is necessary.

(a) CRYSTAL.—The carrier frequency of the transmitter is controlled by one of the quartz crystals, Y-101 to Y-106 inclusive. These crystals have been ground to oscillate at their designated frequencies and to have a very low temperature-frequency coefficient. The crystal unit base is a conventional 8-prong octal tube base which fits into a tube socket located in the front center part of the "RADIO-FREQUENCY SECTION." A window and light on the panel of this section provide a means of identifying the crystal from the outside while the transmitter is in operation. Crystals are marked with a designation letter as described in table 6-1.

(b) **OSCILLATOR-TRIPLER CIRCUIT.**—The oscillator-tripler circuit is shown in figure 4-3; a JAN-807 tube, V-101, is used in the circuit. The frequency of oscillation is held constant by the quartz crystal between the control grid of the tube and ground. A regenerative circuit is used in which the cathode is at an r-f potential above ground by virtue of the inductance L-101 in the cathode circuit. Bias for the tube is obtained by applying the voltage drop across cathode resistor R-102 to its grid (through grid leak resistor R-101). Additional bias is supplied by the drop across resistor R-101. The low-potential end of resistor R-102 is grounded through winding No. 1 of the overload relay, K-101. Capacitor C-103 is a cathode bypass capacitor. The amount of feedback is controlled by the capacitive voltage divider consisting of capacitors C-101 and C-102. The screen grid of the tube is bypassed to ground by capacitor C-106. The plate circuit consists of variable capacitor C-107 and inductor L-104 and is tuned to the third harmonic of the crystal frequency. Adjustment is made by means of a screw-driver control on the panel of the "RADIO-FREQUENCY SECTION" marked "XTAL OSC." The low-potential end of inductor L-104 is bypassed to ground by capacitor C-109. A parallel choke and resistor combination, L-102 and R-106, is inserted in the plate circuit for suppression of parasitic oscillations. Plate voltage for the tube is obtained directly from the 600-volt supply source. Screen-grid potential is obtained from a point on the voltage divider formed by resistors R-103, R-107, R-117 and R-119 which are wired in series across the 600-volt source. One side of the filament is grounded; the other is bypassed to ground through capacitor C-104.

(c) **FIRST MULTIPLIER CIRCUIT.**—A JAN-807 tube, V-106, is used in the first multiplier circuit, shown in figure 4-4. Its grid receives excitation from a tap on the oscillator-tripler plate coil, L-104, through coupling capacitor C-110. Grid bias is provided by the 100-volt bias supply and voltage drops across cathode resistor R-122 and grid leak resistor R-118. The grid is isolated for r-f currents by choke L-106 and capacitor C-112. The cathode is maintained at r-f ground potential by capacitor C-113. Direct cathode currents are returned to ground through resistor R-122, meter shunt resistor R-108, and winding No. 1 of relay K-101 (see figure 4-5). The screen is bypassed to ground by capacitor C-115. Potential for the screen is obtained from the same source as is that for the oscillator-tripler tube screen. The plate circuit impedance, consisting of inductor L-107 and variable capacitor C-116, is tuned to three times the control-grid excitation frequency. Adjustment of capacitor C-116 is made by means of a screw-driver control on the panel of the "RADIO-FREQUENCY SECTION" marked "1ST. MULT. PL." Capacitors C-117 and C-118 provide paths to ground for r-f currents. Plate voltage is obtained directly from the 600-volt supply through radio-frequency choke L-108. One side of filament circuit is grounded and the other side bypassed to ground by capacitor C-114.

(d) **SECOND MULTIPLIER CIRCUIT.**—Tube JAN-4E27, V-107, is used in the second multiplier circuit (see figure 4-6). Its grid receives excitation from the first multiplier plate coil, L-107, through coupling capacitor C-119. Grid bias is provided by the 100-volt bias supply and the drop across grid leak resistor R-130. The grid is isolated for r-f currents by choke L-109 and capacitor C-121. The filament is maintained at ground potential by capacitors C-122 and C-123. A d-c path to ground is provided through a center-tap on the filament transformer winding, meter shunt resistor R-109, and winding No. 1 of relay K-101. The suppressor grid is connected directly to ground. The screen voltage is obtained from the junction of resistors R-131 and R-132 which are connected in series across the 600-volt supply source. The plate load, consisting of inductor L-110 and variable capacitor C-125 in series, shunting the capacity of the tube plate to ground, is tuned to twice the grid excitation frequency. Adjustment of capacitor C-125 is made by means of a screw-driver control marked "2ND. MULT. PL." on the panel of the "RADIO-FREQUENCY SECTION." Plate potential is obtained from the 1000-volt supply source through radio-frequency choke L-112.

(e) **POWER AMPLIFIER CIRCUIT.**—The final amplifier stage is shown in figure 4-7. This circuit employs two JAN 4E27 tubes, V-109 and V-110 (commercial type HK257B), in a push-pull class C circuit arrangement. The grids of the tubes receive excitation from the second multiplier plate circuit by means of link L-111 and grid coil L-115. Link L-111 is grounded at the center of its grid end to maintain electrical balance. Grid bias is provided by the 100-volt bias supply and the drop across grid leak resistor R-133. The bias is applied to the mid-point of the grid inductor L-115, through the r-f isolation choke L-113. The low-potential end of choke L-113 is bypassed to ground for r-f currents by capacitor C-127. The filaments are maintained at r-f ground potential by capacitors C-130, C-131, C-134, and C-136. Two separate windings on transformer T-104 supply filament power to the tubes. The center taps of the windings are returned to ground through meter shunts resistor R-111 and R-112 and coil No. 1 of overload relay K-101 (see figure 4-5). The suppressor grids are connected directly to ground. The screen grids are bypassed to ground through capacitors C-129, C-132, C-135, and C-137. Screen voltages are obtained directly from the 300-volt supply source. The output plate circuit consists of inductor L-117 and variable capacitor C-139. This circuit and the grid are tuned to the same frequency. No neutralization is necessary because tubes V-109 and V-110 are pentode tubes. Adjustment of capacitor C-139 is made by a screw-driver control on the front panel of the "RADIO-FREQUENCY SECTION" marked "PA. PLATE." Plate voltage for the tubes is obtained directly from the 1000-volt supply source. Inductor coil L-118 is a shielded loop coupled to coil L-117 and connected to a transmission line feeding modulator and bridge MD-24/CRN-10.

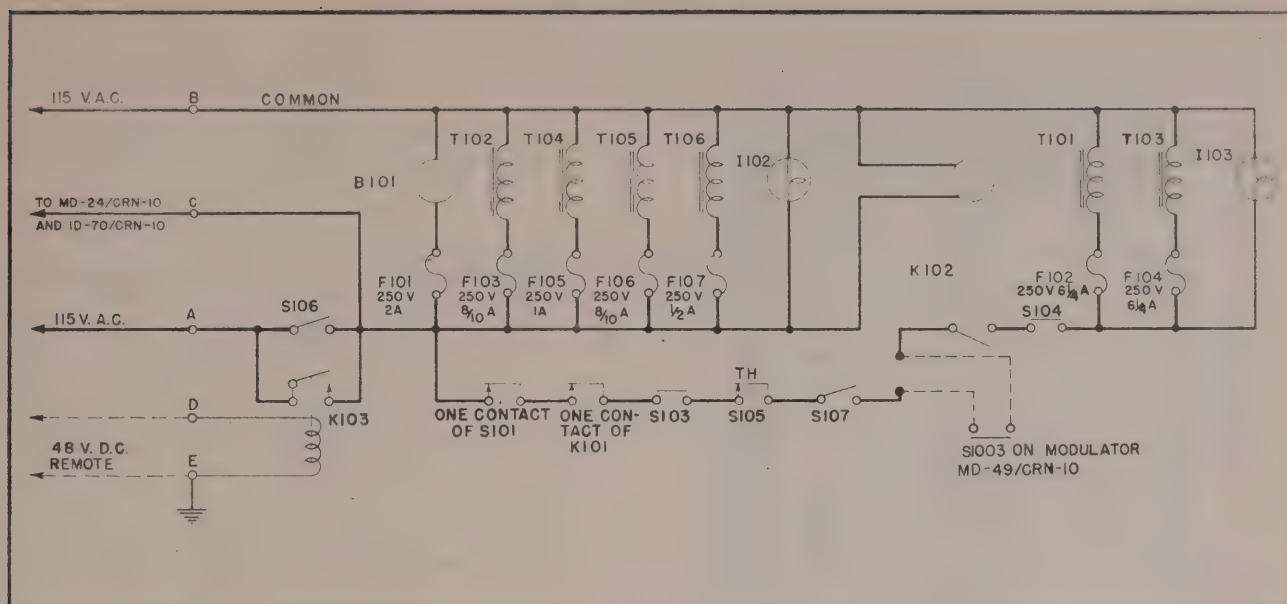


Figure 4-13. Radio Transmitter T-66/CRN-10—Functional Diagram of Power Frequency and Control Circuit

(d) POWER SWITCHING CIRCUIT.

(See figure 4-13.)

1. Switch S-106 is the main power switch. It is located on the panel of the "POWER SUPPLY SECTION" and is marked "FILAMENT." When this switch is closed, the 115 volt a-c primary voltage is applied to the blower motor, B-101; to the time delay relay, K-102; to the primaries of all filament transformers; to bias supply transformers; and to indicating lamp, I-102 (a green light located next to switch S-106 on the panel of the "POWER SUPPLY SECTION"). Switch S-107 is a high-voltage control switch. It is located on the panel of the "POWER SUPPLY SECTION" and is marked "PLATE." An associated indicating lamp, I-103, is a red light located next to switch S-107 on the panel of the "POWER SUPPLY SECTION."

2. Switch S-107 is wired in series with the interlock circuit of the transmitter. Other switches in this circuit are the two interlock safety switches, S-103 and S-104, located in the "RADIO-FREQUENCY SECTION" and the "POWER SUPPLY SECTION" respectively; the thermostat, S-105, a pair of contacts on overload relay K-101; a pair of contacts on reset switch S-101; and the contacts of time delay relay K-102. These seven switches are wired in series with the paralleled primaries of high-voltage transformers T-101 and T-103. Therefore, the opening of any one of them will remove from the transmitter all voltages in excess of 115 volts, with the exception of the plate-supply voltage of the bias rectifier tube, V-108. Switch S-107 is normally left in the "ON" position. It is included in the transmitter to provide a means of shutting off the power during brief periods of equipment adjustment.

3. Relay K-103 is incorporated in the transmitter to permit operation of the equipment from a remote point. This relay has a pair of normally open contacts wired in parallel with the filament switch, S-106. The relay coil is designed for operation on 48 volts, direct current. When the coil is energized, the contacts close and the operation of the transmitter is exactly the same as when the "FILAMENT" switch, S-106, is closed.

b. TRANSMITTER JUNCTION BOX.

(1) Primary power for operating all units of the equipment is distributed through a junction box attached to the side of radio transmitter T-66/CRN-10. The splash-proof box, made entirely of aluminum, measures approximately 6 x 9 x 10 inches and has two doors on the front and a removable fuse cover on the top. The box contains switches, terminals, fuses, receptacles, a resistor, and a pilot light. Six cables permanently connected to terminal boards, protrude through sleeves in the bottom of the box.

(2) Figure 8-24 is a schematic diagram of the junction box. The 115-volt a-c power source may be connected either to a 20-foot cable with polarized plug extending from the junction box, or to a pair of terminals on the front of the box. One side of the a-c line is grounded to the trailer chassis through the box and the transmitter cabinet. Switch S-201 is the main power switch and is used to select the power source. The complete equipment may be turned on and off by means of this switch. A short five-conductor cable is used between the box and the transmitter. Two-conductor cables are used for power connections to modulator and bridge MD-24/CRN-10, indicator ID-70/CRN-10, and obstacle light MX-217/CRN-10.

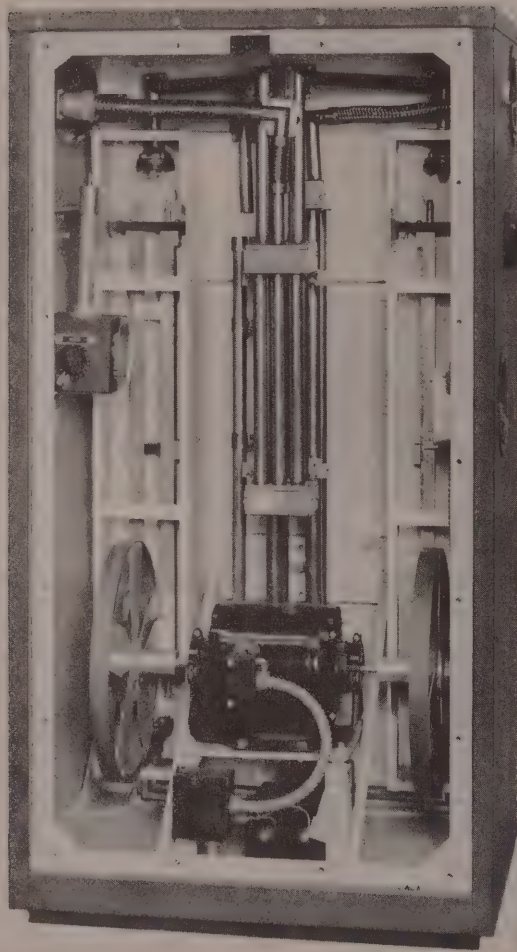


Figure 4-14. Modulator and Bridge MD-24/CRN-10—Front View, Panel Removed

(3) A 20-foot cable, terminated with lugs, is used for connections to a battery. The battery voltage is available at a pair of terminals (one grounded) on the front of the junction box. Switch S-202 is the obstacle light switch which allows a selection of three sources of operating power. In one position, the lights are connected to a 12-volt battery source. Lamps rated at 12.8 volts are to be used when operating from the battery. A mechanical stop button must be depressed before the switch can be turned from the "BATTERY" to the "115 V.A.C." or "RUNWAY SOURCE" positions. This is to remind the operator that lamps must be changed. In the "115 V.A.C." position, the lamps are connected to the generator or external mains through the dropping resistor, R-201, which reduces the voltage to about 100 volts. When the switch is in the "RUNWAY SOURCE" position, the lamps are connected to a pair of terminals on the front of the box marked "105 V.D.C." These terminals are used when voltage from an airport runway lighting system is available. Lamps rated at 105 volts are used when operating with the obstacle light switch in either of the latter two positions.

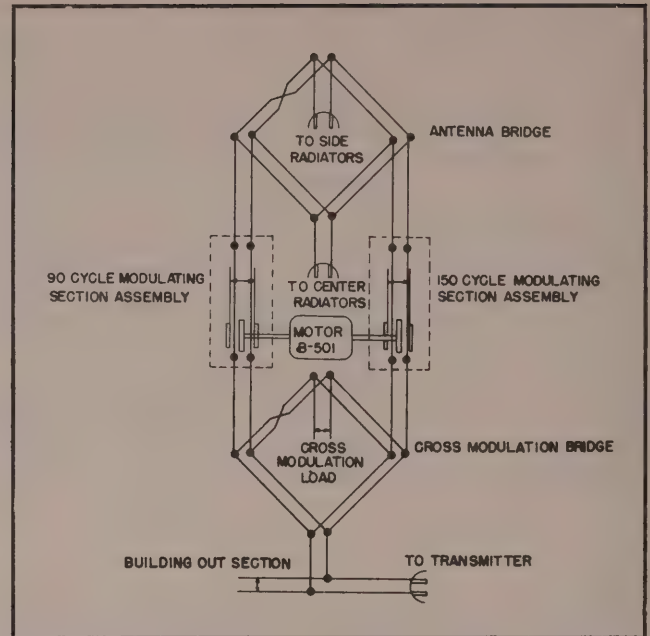


Figure 4-15. Modulator and Bridge MD-24/CRN-10—R-F Schematic Diagram

(4) For remote operation of the transmitter, a source of approximately 48 volts d-c is connected to the 48 volt d-c terminals on the front of the junction box. One terminal is grounded.

(5) The "POWER ON" light, lamp I-201, serves to indicate that power is being applied to the equipment when switch S-201 is turned on. Two receptacles (one polarized) are located on the rear panel of the junction box and are usable when switch S-201 is turned on.

(6) The four fuses used are located at the top of the junction box and may be reached by releasing the four captive screws on the top cover plate marked "FUSES."

c. MODULATOR AND BRIDGE MD-24/CRN-10. (See figure 4-14.)

(1) GENERAL.—Radio transmitter T-66/CRN-10 is capable of delivering approximately 100 watts of unmodulated radio-frequency energy at frequencies in the range of 108.3 to 110.3 megacycles. Before this energy can be made to produce a course, it must be modulated, phased, and fed into the radiating system in order to produce the field configurations discussed in section I, paragraph 1a(3). As described previously, the course is produced by two sharply overlapping patterns, each modulated at a different audio frequency. It is the function of the modulator and bridge MD-24/CRN-10 to divide the energy from the transmitter into two equal portions, modulate each with its respective audio frequency, and then recombine the energies to feed antenna system AS-156/CRN-10 properly. To accomplish this, two types of circuits are used. One type (called a bridge) is used for the division, combination,

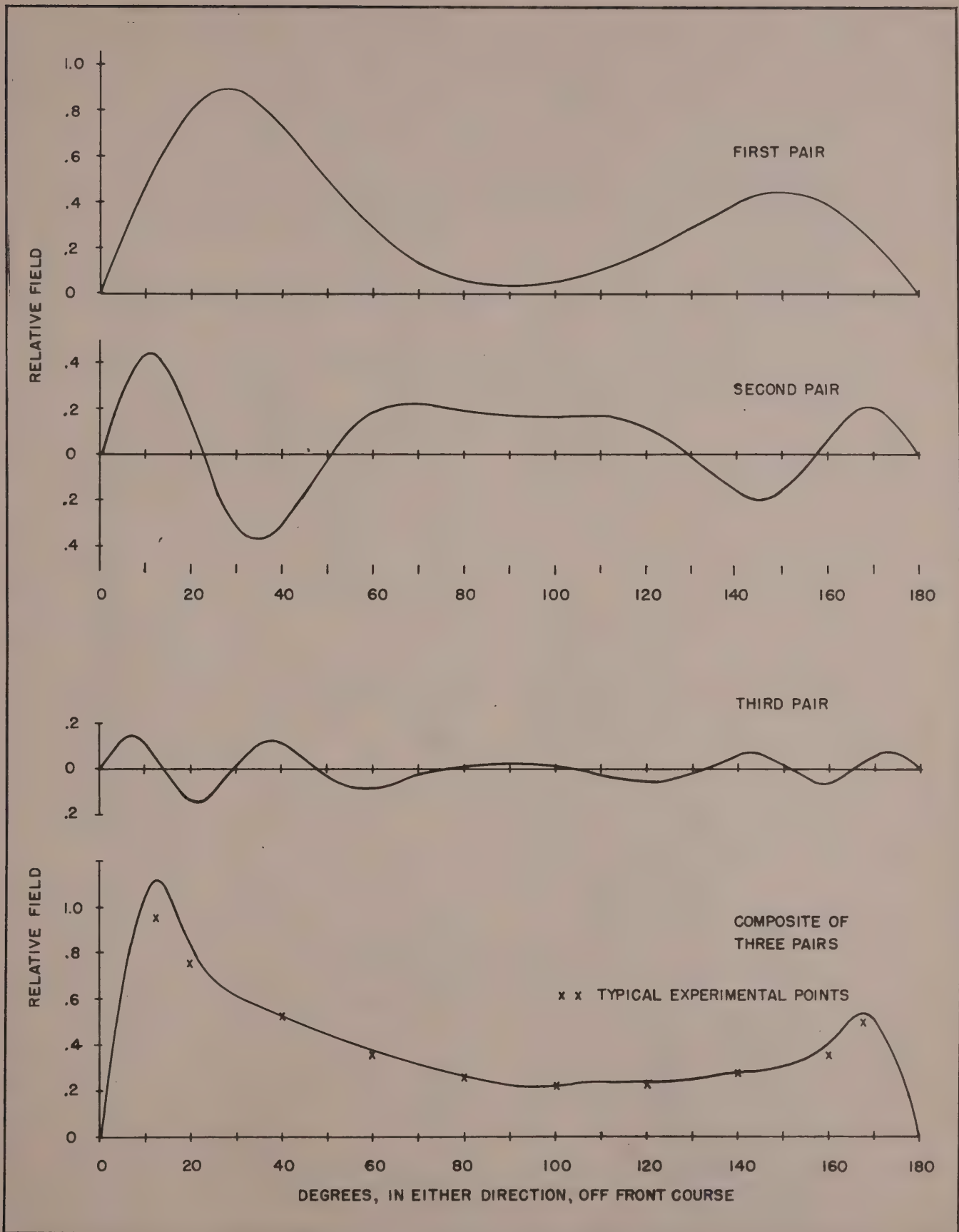


Figure 4-33. Side Band Radiation Pattern

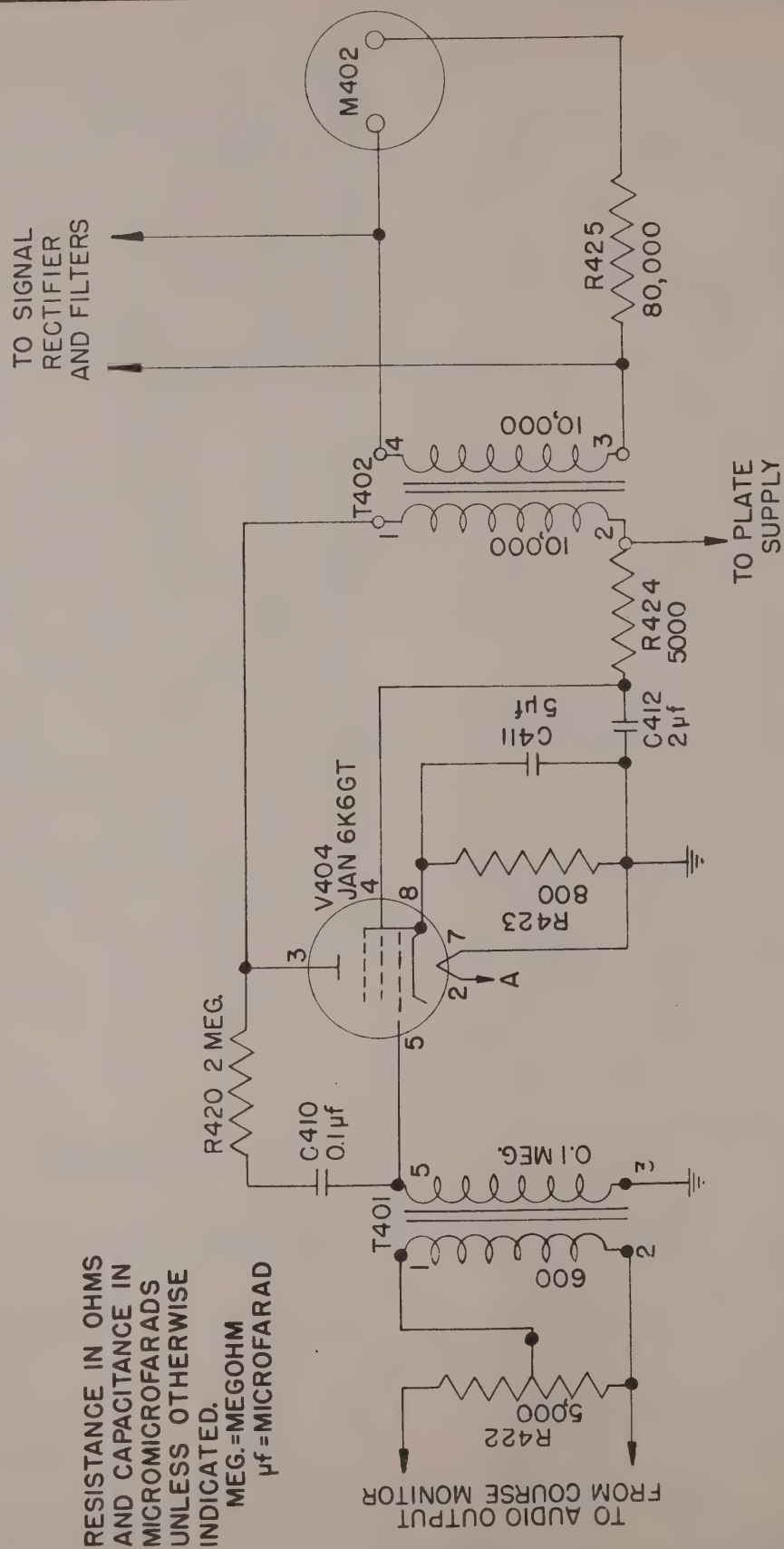


Figure 4-34. Audio Amplifier—Functional Diagram

plate load. C-304 maintains the low-potential end of the plate winding of T-301 at audio ground potential. The 600-ohm output winding of transformer T-301 feeds the audio voltage from the detector to indicator ID-70/CRN-10 or ID-70A/CRN-10 through two conductors in cord CX-244/CRN-10. Meter M-301 indicates course position and is connected in series with the course meter in indicator ID-70/CRN-10 or ID-70A/CRN-10 by means of two conductors in cord CX-244/CRN-10. When S-301 is closed, R-302 forms an unbalancing load across the course indicator circuit in indicator ID-70/CRN-10 or ID-70A/CRN-10, making M-301 usable as a tuning indicator.

(3) The audio voltage from the course monitor is further amplified in indicator ID-70/CRN-10 or ID-70A/CRN-10 before it is filtered and rectified for use in indicating course position. The course monitor receives its plate and heater power from indicator ID-70/CRN-10 or ID-70A/CRN-10.

g. INDICATOR ID-70/CRN-10 or ID-70A/CRN-10. (See figure 8-28.)—Electrically the indicator is made up of four major circuits, namely, the filter circuit, alarm circuit, amplifier circuit, and power supply circuit.

(1) The power supply circuit supplies filament and plate voltage for the operation of tubes in the indicator ID-70/CRN-10 or ID-70A/CRN-10 and course monitor TS-180/CRN-10.

(2) The amplifier circuit receives the audio signal from course monitor TS-180/CRN-10 and amplifies it before applying it to the filter circuit, alarm tube, and the "FILTER INPUT" meter.

(3) The filter circuit divides the audio signal into 90- and 150-cycle channels and rectifies them. The rectified 90- and 150-cycle signals are then passed on to the alarm circuit and level-indicating meters in indicator ID-70/CRN-10 or ID-70A/CRN-10 and course monitor TS-180/CRN-10.

(4) The alarm circuit receives the 90- and 150-cycle signals. Through a system of relays, alarm lights, and bell the alarm circuit advises the operator of any *course shift* or appreciable drop in signal level.

(5) The audio voltage (90 and 150 cycles) from the course monitor TS-180/CRN-10 is applied to the 600-ohm winding of transformer T-401 by means of "SENSITIVITY" control R-422. (See figure 4-34.) The secondary of transformer T-401 is connected to the grid of V-404 (JAN-6K6GT) which is operated as a class A audio amplifier. Capacitor C-411 is an audio bypass capacitor across the cathode bias resistor R-423. Resistor R-424 and capacitor C-412 form a resistance-capacitance filter in the screen voltage supply. Transformer T-402 forms the plate load for the amplifier tube. Resistor R-420 and capacitor C-410 are a feedback network to equalize the audio-frequency response of the amplifier at 90 and 150 cycles.

(6) The amplified audio voltage is coupled through capacitor C-408 to the input of the 90- and 150-cycle filters. Meter M-402 in series with resistor R-425 is connected across the output of the audio amplifier for the purpose of setting the input level to the 90- and 150-cycle filter in the course indicator circuit.

(7) The power supply furnishes plate power for the detector tube V-301 in course monitor TS-180/CRN-10 and the audio amplifier tube V-404 in indicator ID-70/CRN-10 or ID-70A/CRN-10 as well as all heater power for both the course monitor and indicator. (See figure 4-35.)

Fuse F-401 protects transformer T-403 which supplies all heater voltage for the course monitor and indicator as well as the plate voltage for the full-wave rectifier V-405 (JAN-6X5GT) and alarm delay tube V-401 and V-403. Choke L-401 and capacitor C-413 are connected as a choke input filter in the output of the plate voltage rectifier. Resistors R-426 and R-421 serve as a bleeder and voltage divider circuit.

(8) In the course indicator circuit, the 90- and 150-cycle filters separate the 90- and 150-cycle voltages. (See figure 4-36.) Resistors R-405 and R-401 are matching loads on the output terminals of impedances Z-402 and Z-401, respectively. Resistor R-401 being variable serves to balance exactly the 90- and 150-cycle voltage outputs from the filters.

(a) Rectifier CR-401 consists of two bridge circuit copper-oxide rectifiers which are connected to the 90- and 150-cycle filter outputs. The rectified outputs from these two rectifiers are applied to resistors R-402 and R-406.

(b) Relay K-401, in series with resistor R-404, is always connected directly across the combined outputs of the two halves of rectifier CR-401. As long as the course is properly centered, the output of one-half of rectifier CR-401 is equal to and in opposite polarity to the output of the other half of rectifier CR-401. Therefore, the resulting potential across and the current through the moving coil of relay K-401 will be zero, and relay K-401 will not be energized. However, if the course shifts over one-quarter degree from the centerline of the runway or one of components Z-401, Z-402, or either half of CR-401 fails electrically, a resultant difference of potential will exist across the moving coil of relay K-401 and the relay will operate causing the alarm to function. Potentiometer R-404 provides a sensitivity variation for relay K-401 and, therefore, makes it possible to vary the amount of course shift required to set off the alarm.

(c) When switch S-401 is in the center "COURSE" position meter M-401, in series with meter M-301 in course monitor TS-180/CRN-10, is also connected across the rectifier outputs. This allows for course position indication on meters M-401 and M-301. When switch S-401 is switched to either of the side positions (90 cycles or 150 cycles), meters M-401 and M-301 are connected in series with resistor R-407 and a multiplier resistor, across the output of one half of rectifier CR-401. The meters indicate the rectifier output voltage and resistor R-403 is switched across the output of the opposite half of the rectifier to maintain a balanced circuit. (See figure 4-36.)

(d) Current through the common return lead of the two halves of rectifier CR-401 energizes K-402. As long as the signal level is over 50 percent of normal value, relay K-402 will remain energized. However, if the signal level falls below 50 percent of normal level,

RESISTANCE IN OHMS
AND CAPACITANCE IN
MICROMICROFARADS
UNLESS OTHERWISE
INDICATED.
 μf = MICROFARAD

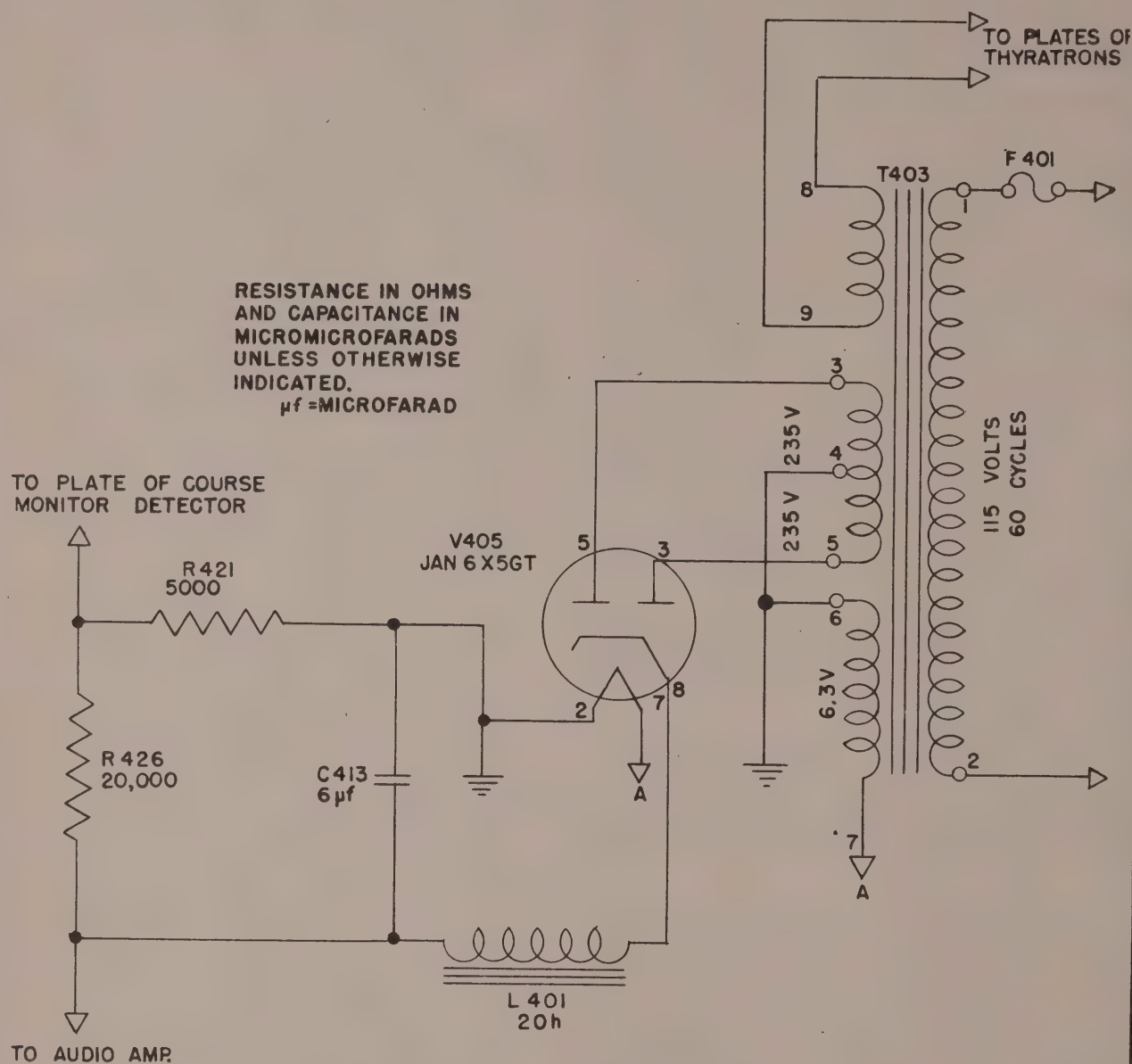


Figure 4-35. Power Supply-Functional Diagram

the current through the relay coil will be lower in value and the relay will release causing the alarm to function. (See figure 8-28.)

(9) The alarm circuit operates as follows:

(a) The operation of the alarm circuit is based on the principle of applying a little more than cutoff bias to the grid of a gas-filled thyatron vacuum tube JAN-2050 (V-403), and then partially neutralizing this negative bias voltage obtained by rectifying a portion

of the 90- and 150-cycle signal, thus permitting the tube to conduct. The negative bias is obtained from a fixed bias supply.

(b) Time delay relay K-407 performs two functions. First, it delays the application of plate voltage to tubes V-401 and V-403 for the first 60 seconds that power is applied to the alarm circuits. Second, it furnishes a path to apply reset voltage to relays K-401 and K-402.

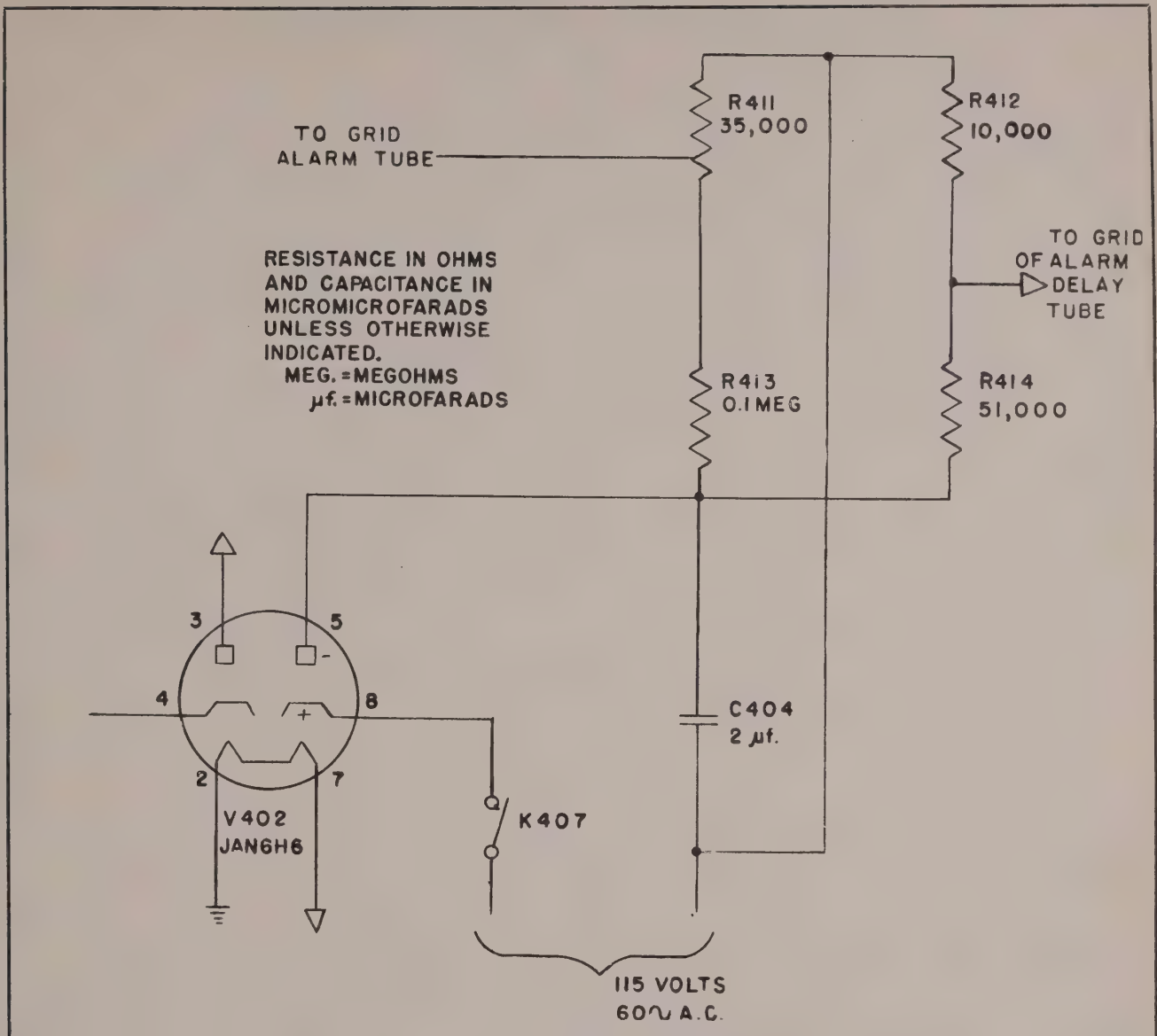


Figure 4-37. Fixed Bias Source—Functional Diagram

(c) Fuse F-402 protects the alarm circuits against overload. Lamp I-404 supplies visual indication and alarm bell I-406 supplies audible indication that the alarm circuits are *on*. Switch S-403 is the "ALARM" power switch.

(d) "RESET" switch S-402 is a double-pole, single-throw momentary contact switch. When S-402 is depressed, one set of contacts short-circuits capacitor C-406, discharging it and thus permitting tube V-403 (JAN-2051) to conduct. The current through V-403 also flows through the winding of relay K-405, thus operating it. One set of contacts on relay K-405 opens the bell-alarm light circuit, and shuts off lamps I-405 and I-406. The other S-402 contacts apply reset voltage to relays K-401 and K-402, through the contacts of relay K-407, thus establishing all circuits at normal.

(10) Bias voltages for the control of the alarm circuit are obtained through the use of V-402 (JAN-6H6) as two half-wave rectifiers. The cathode heating circuit through socket pins 2 and 7 is common to both circuits. Pins 5 (plate) and 8 (cathode) are used for "FIXED BIAS SOURCE." Pins 3 (plate) and 4 (cathode) are used for the "SIGNAL RECTIFIER" circuit.

(a) FIXED BIAS SOURCE.—A 115-volt, 60-cycle, a-c line voltage is applied to one half of V-402 (JAN-6H6) with resistors R-411, R-412, R-413, and R-414 operating as a voltage divider network. (See figure 4-37.) Capacitor C-404 is used as a ripple filter. Bias voltage to the grid of the alarm delay tube V-401 (JAN-2051) is taken from the junction point of resistor R-412 and R-414. Bias voltage to the grid of the alarm tube is supplied through the movable contact of variable resistor R-411.

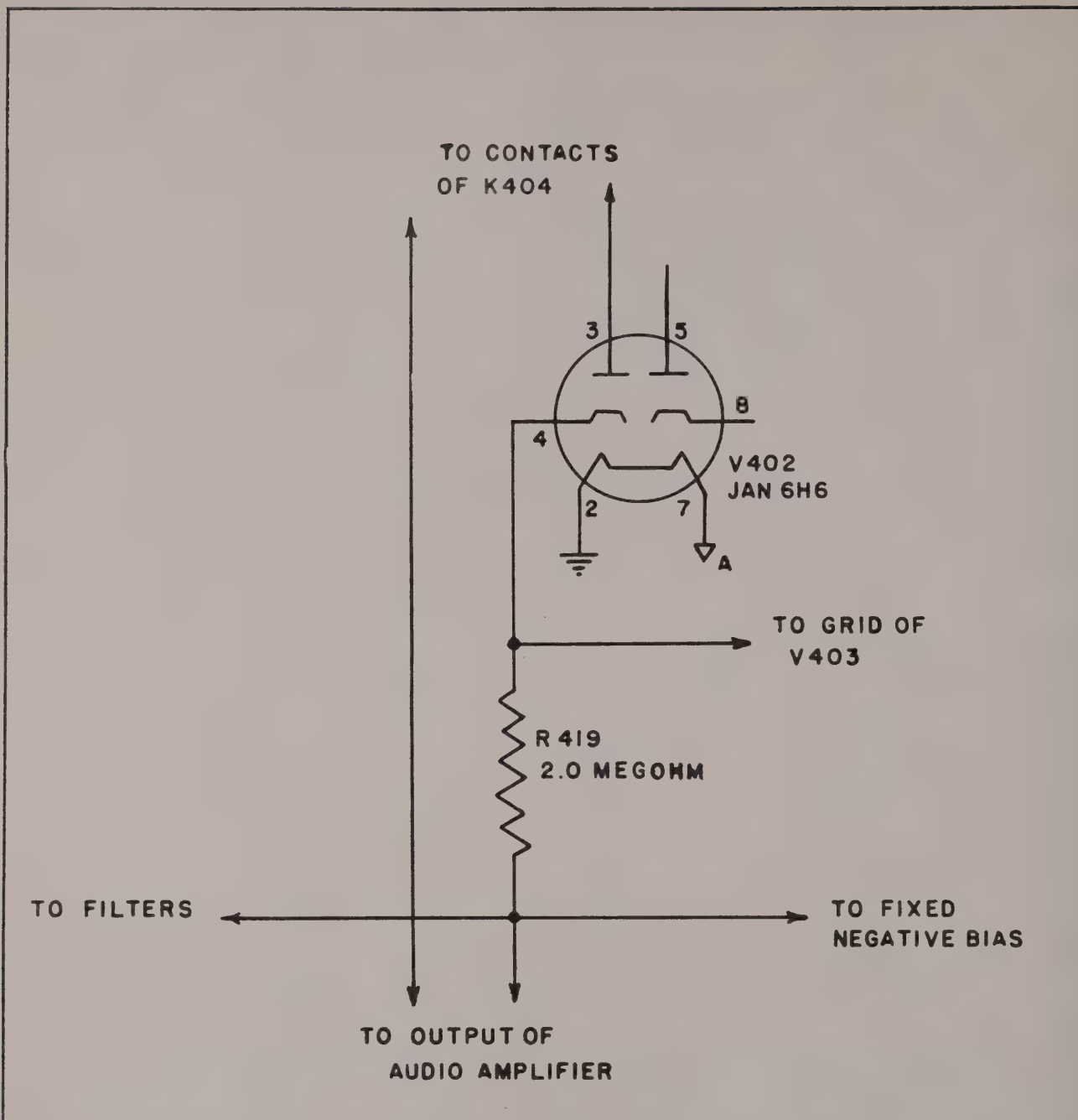


Figure 4-38. Signal Rectifier—Functional Diagram

(b) SIGNAL RECTIFIER.—90 and 150-cycle signal from the 10,000-ohm winding of audio transformer T-402 is applied to socket pins 3 and 4 of tube V-402 (JAN-6H6) through resistors R-416 and R-419. (See figure 4-38.) Resistor R-419 acts as a cathode circuit load of tube V-402 and capacitor C-409 operates as a filter of ripple voltage. The positive end of resistor R-419 (cathode end) is connected to the grid of alarm tube V-403 (JAN-2051) through resistors R-417 and R-418. The other end of resistor R-419 is connected to the fixed negative bias course through the movable con-

tact of variable resistor R-411 which allows adjustment of the negative bias applied to the grid of the alarm tube. Thus the positive potential applied to the grid of the alarm tube by the signal rectifier is made to buck the negative bias voltage applied to the grid of the alarm tube by the "FIXED BIAS SOURCE."

(11) Resistor R-417 and capacitor C-406 comprise a resistance-capacitance time delay circuit in the grid circuit of alarm tube V-403 (JAN-2051). (See figure 4-39.) The total time delay obtained from this circuit plus the resistance-capacitance combination of resistor

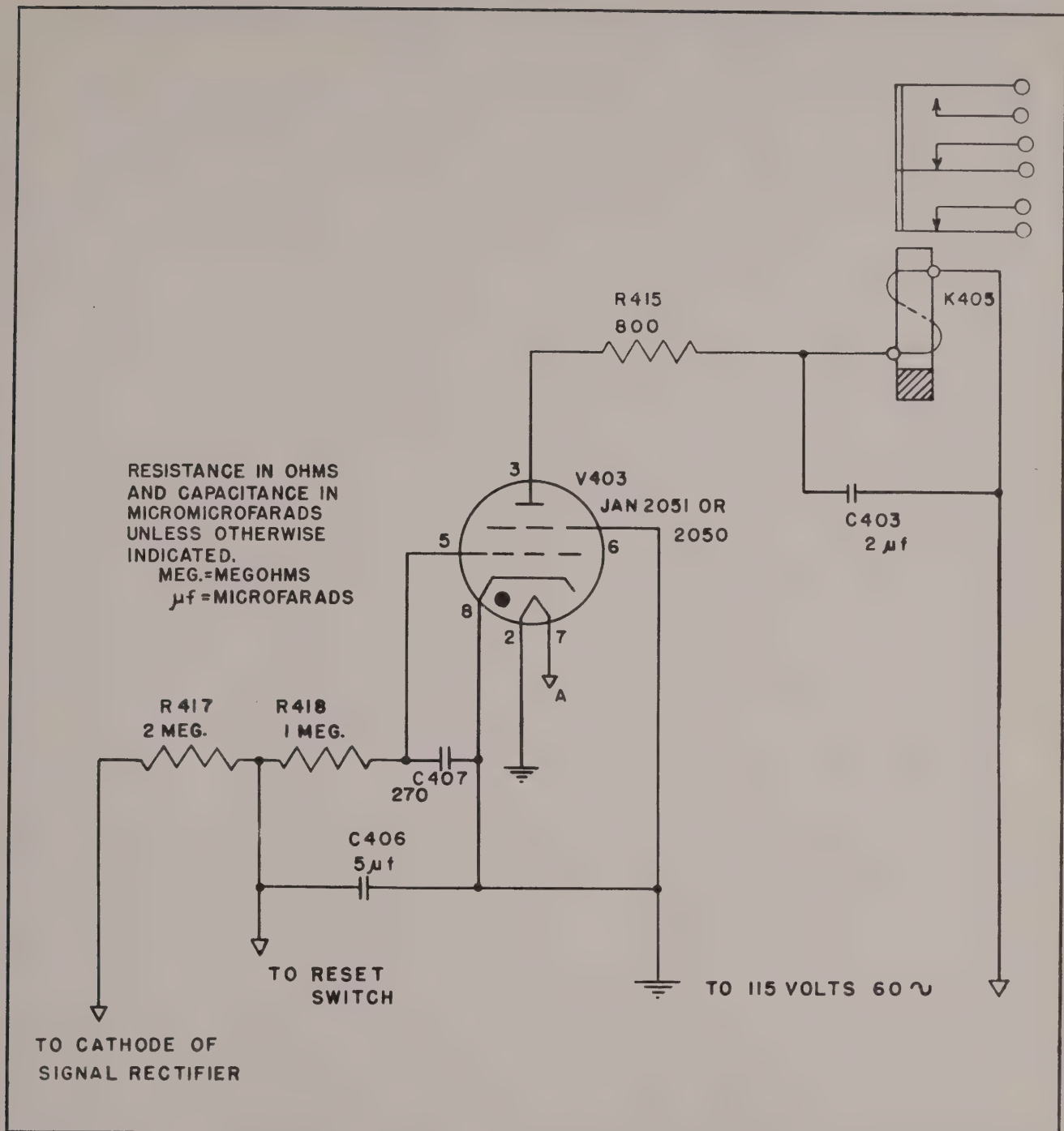


Figure 4-39. Alarm Tube Functional Diagram

R-419 and capacitor C-409 is dependent upon the setting of variable resistor R-411 and is adjustable from about zero to 25 seconds. The time delay setting is never adjusted for zero seconds and, therefore, changes in applied grid voltage do not affect the grid of V-403 immediately since capacitor C-406 must have time to charge before the bias on the grid of V-403 reaches its new value. The circuit was designed to be adjusted by means of resistor R-411 for an 8 to 15 second time

delay. The reason for this delay is to prevent the alarm bell from ringing due to transient or momentary course shifts caused by vehicles or aircraft passing close to the antenna array.

(a) Resistor R-418 is a grid current limiting resistor. Capacitor C-407 is a radio-frequency bypass capacitor. Resistor R-415 is a plate current limiting resistor, and capacitor C-403 is a ripple filter across the coil of relay K-405.

RESISTANCE IN OHMS
AND CAPACITANCE IN
MICROMICROFARADS
UNLESS OTHERWISE
INDICATED.

MEG.=MEGOHMS
 μf = MICROFARADS

TO NEGATIVE BIAS
THROUGH K403 CONTACTS

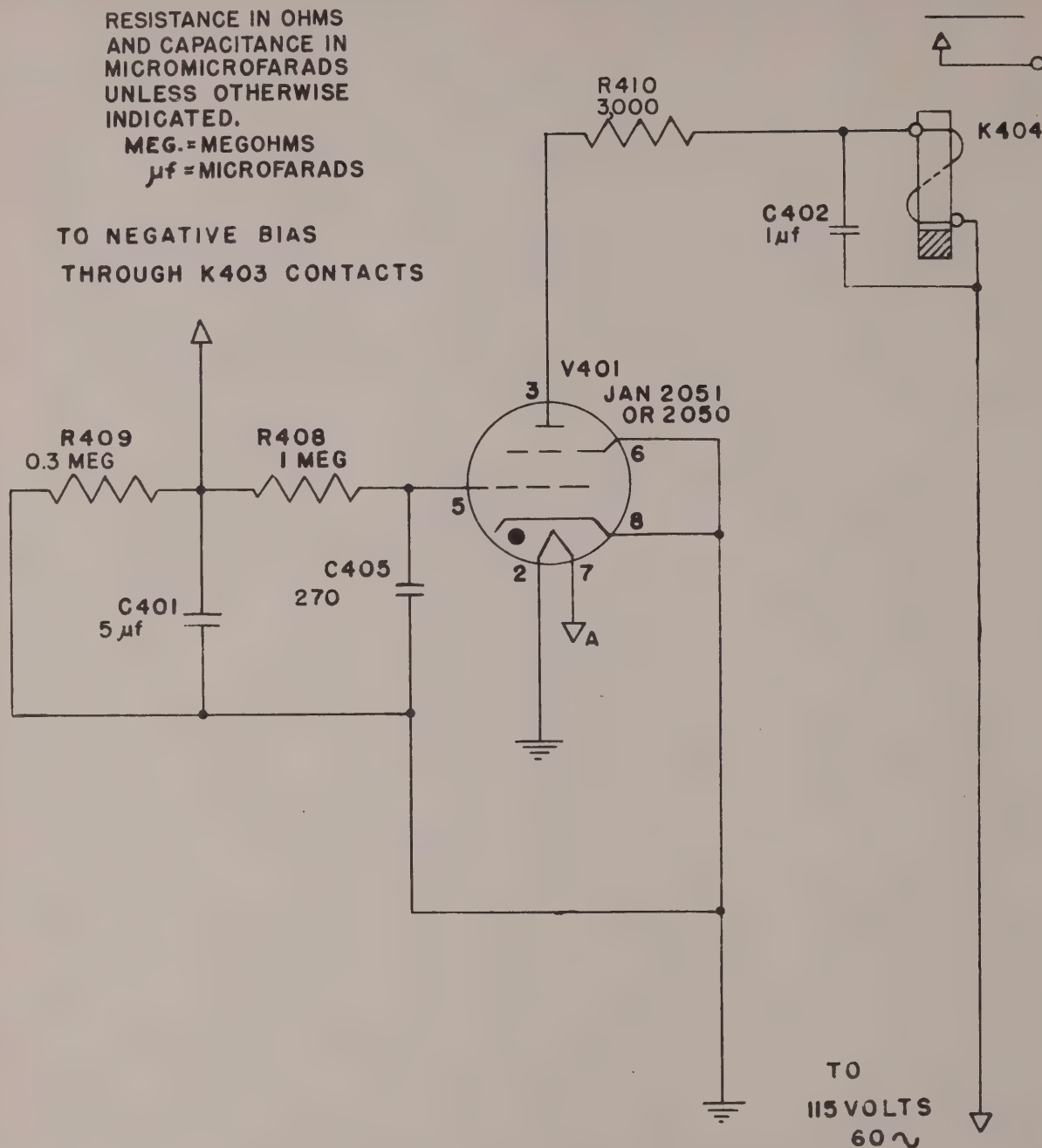


Figure 4-40. Alarm Delay Tube—Functional Diagram

(b) When the voltage across capacitor C-406 has reached the cutoff value of alarm tube V-403 (usually about 2 volts negative), the tube will stop conducting and relay K-405, which is in series with the 115-volt, 60-cycle supply to the plate of V-403, will be deenergized and will release. When K-405 is released, its contacts perform the following three operations:

1. The alarm bell I-406 and the red "ALARM" light I-405 are energized through the pair of normally

closed contacts shown nearest the coil of K-405 on figure 8-28.

2. The middle pair of normally closed contacts are closed but perform no active function at this point since they are only used during the 60-second time delay period of relay K-407. During the delay time, 115-volt, 60-cycle power is applied to the reset coil of K-401 through the contacts.

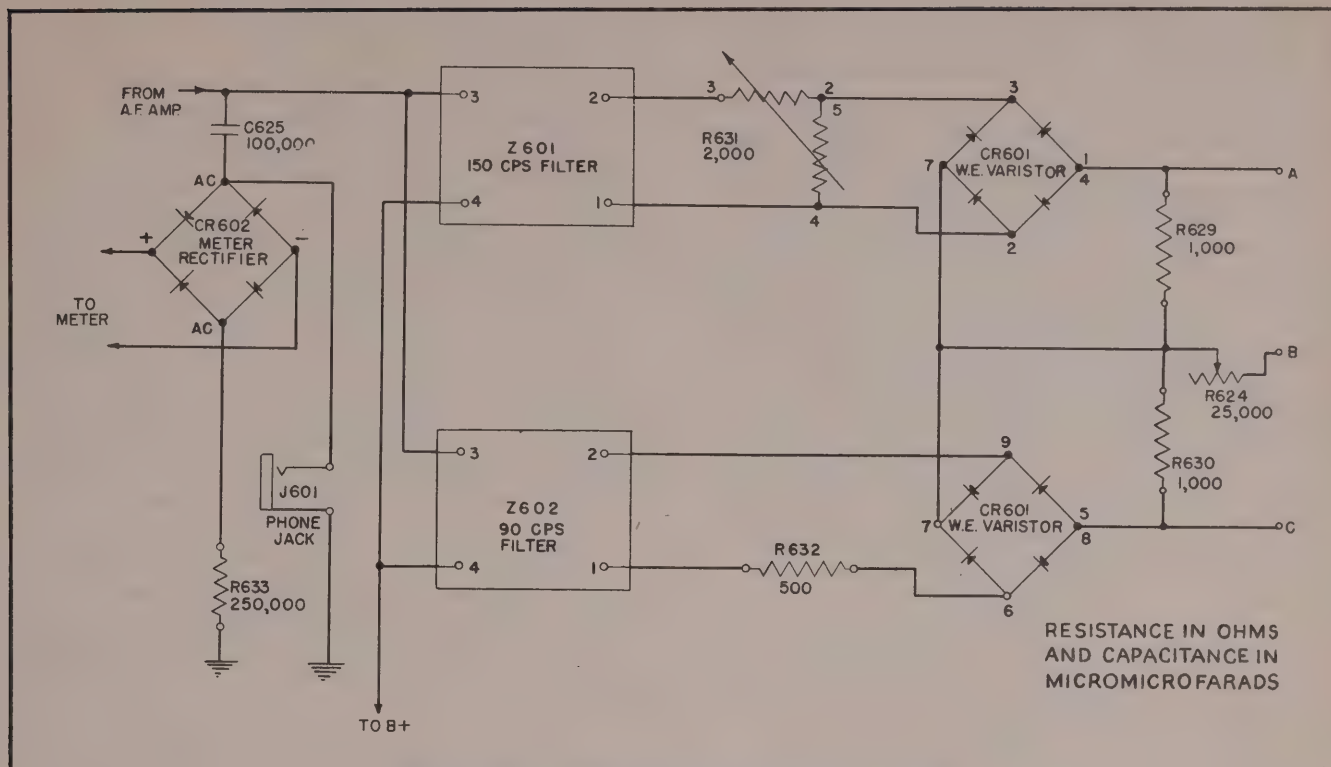


Figure 4-48. Filter and D-C Comparator Circuit

(12) A meter-type, copper-oxide rectifier, CR-602, with its multiplier resistor, R-623, is connected across the output of the a-f amplifier in parallel with the filter primaries. Capacitor C-625 is used to block the "B" battery voltage from the rectifier. The d-c output of the rectifier is an indication of the magnitude of the signal impressed across the filters. This indication is obtained when the "MET. SWITCH" is in position "5." A jack, J-501, is connected across the rectifier input and may be used for observing aurally (with headphones) or visually (with oscilloscope or wave analyzer) the characteristics of the signal entering the filters.

(13) The balancing attenuator, R-631, is located on the rear edge of the course detector chassis. This control is adjusted and locked at the factory. It must not be readjusted unless some part of the filter circuit is replaced, and then only if the replacement causes a course indication which is known to be in error.

(14) The meter used in the instrument, M-601, is a zero-center, 150-microampere, d-c unit. The smallest scale division is 5 microamperes. Used in conjunction with switch S-603 (a nine-position, two-circuit rotary switch), it provides a variety of indications. In positions "1," "2," "3," and "4" it is converted into a voltmeter to indicate the condition of the four batteries used in the set. (See figure 4-46.) In position "1," the meter is connected in series with filament battery BT-603 and multiplier resistor R-617. In position "2," the meter is connected in series with the other filament battery BT-604, and multiplier R-619. In position "3," the "B" battery and multiplier R-618 are connected in series with the meter. In position "4," the "C" battery

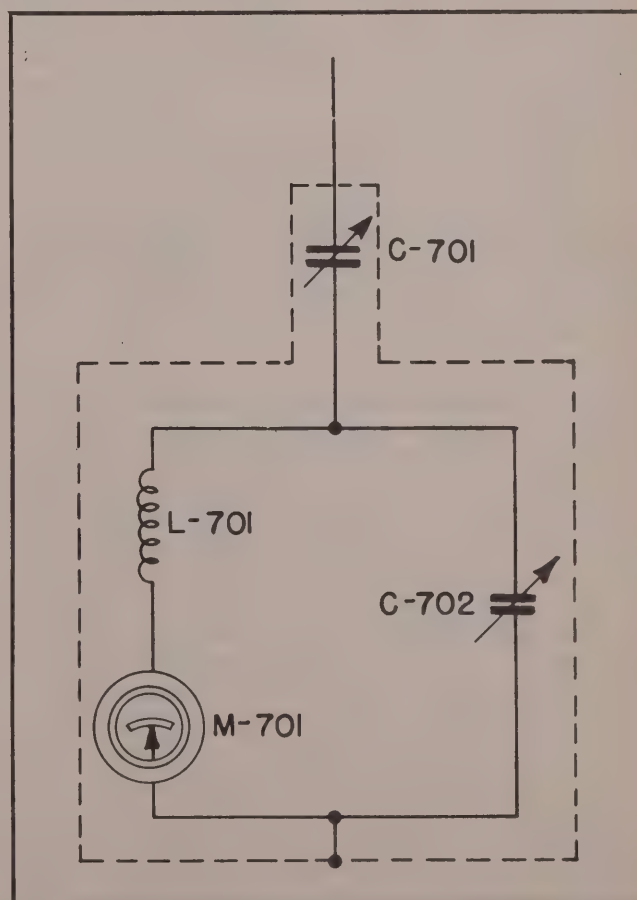


Figure 4-49. Voltmeter IS-176-B—Simplified Schematic Diagram

BT-605, and multiplier R-616 are connected to the meter. The values of multiplier resistors R-616, R-617, R-618, and R-619 are chosen so that in each switch position the meter reading is an approximate *percentage of normal* battery voltage. If, in any of the first four positions, the meter reads below 70 microamperes (70 percent of normal voltage) the operation of the instrument is likely to be impaired. In position "5," the meter is connected to the output of rectifier CR-602 to give an indication of filter input signal. In position "6," the meter is connected across the diode load potentiometer, R-622, as described in paragraph 2.g., this section, to indicate diode current for tuning purposes. In position "7," the meter is connected between points A and C of figure 4-46 and gives indications of course position. In position "8," the meter is connected between points A and B (see figure 4-46) and indicates the magnitude of 150-cycle modulation. In position "9," the meter is connected between points B and C (see figure 4-46) to indicate the magnitude of 90-cycle modulation.

IMPORTANT

Reference to the complete schematic diagram, figure 8-26, will indicate that the two-pole battery switch S-602 ("BATT-OFF") must be turned on in order to obtain meter readings in all meter switch positions.

i. RADIO SET SCR-610-()*.

(1) This radio set is a portable low-power, frequency-modulated radio receiver and transmitter designed for two-way voice communication between ground stations.

(2) The radio set operates on any two of 120 crystal-controlled channels (spaced 100 kilocycles apart) lying within the frequency range of 27.0 to 38.9 megacycles. The radio set has a dependable range of five miles. (For a further discussion of this radio set, refer to the *Handbook of Maintenance Instructions for Radio Set SCR-610-A*.)

j. MODULATOR MD-49/CRN-10.

(1) GENERAL.—Modulator MD-49/CRN-10 is used for amplitude modulating the output of Radio Transmitter T-66/CRN-10 for identification purposes. It consists of a vacuum tube audio oscillator operating on a frequency of 1020 cycles. A motor driven keyer operates to code the signal by either short circuiting or passing the signal generated by the audio oscillator. The generated audio signal, when passed by the keyer, is applied to the grids of a push-pull modulator-amplifier through an input transformer. Modulation is accomplished by passing the final radio frequency amplifier plate current through the output (secondary winding) of the modulation transformer.

The modulator cabinet is electrically tied to the radio transmitter cabinet by a conductor cable which terminates in an AN type connector which plugs into a receptacle on the left hand side of the radio transmitter cabinet. All power for the operations of the

modulator as well as the modulator output is transmitted through this cable.

The circuit used (see figure 8-27A) consists of an audio oscillator-keyer unit and modulator unit.

(2) AUDIO OSCILLATOR.—The 1020-cycle oscillator uses tube JAN-807 (V-1001) in a magnetically coupled feedback oscillator circuit. Transformer T-1001 is made up of three windings. The winding in the plate circuit of V-1001 is tuned with a capacitor enclosed in the transformer unit. Another winding is connected between grid and ground while the third winding provides the output. The screen grid and plate of V-1001 obtain power through the series dropping resistor R-1006, which resistor in combination with resistor R-1005 forms a voltage dividing network. Self bias for the tube is obtained through the cathode resistor R-1001. Capacitor C-1001B is used as a radio frequency bypass capacitor.

The output of the oscillator is obtained from a tertiary winding on the oscillation transformer. It is then connected to the primary of the modulator-amplifier input transformer T-1002 through modulation control "T" pad attenuator R-1002 and series line resistor R-1003.

The keyer, S-1001, intermittently shorts out the output of the oscillator according to the identification signal set up on the keyer cam. When the keyer contacts are closed the audio input to the modulator-amplifier stage is short circuited, consequently no modulation takes place.

Switch S-1002, when in the "OFF" position, short circuits the output of the oscillator and opens the 115-volt 60-cycle a-c power to the keyer motor and indicator light I-1101. The primary winding of filament transformer T-1003 is paralleled across the incoming 115-volt 60-cycle a-c line from the transmitter and since switch S-1002 has no control over it, the filaments of all modulator tubes will be lighted when Radio Transmitter T-66/CRN-10 is in operation.

(3) MODULATOR-AMPLIFIER. — Two tubes JAN-807 (V-1002 and V-1003) are used in a push-pull operated class AB stage furnish modulation power for the transmitter. The input is obtained by coupling to the oscillator output circuit with transformer T-1002. Self bias for the tubes is obtained through cathode resistor R-1004. Capacitor C-1001 is the cathode bypass condenser. The screen grids obtain power through series dropping resistor R-1006.

The plates are excited through the primary winding of output transformer T-1004, fuse F-1001 and the tie cable, from the low voltage power supply of Radio Transmitter T-66/CRN-10. The secondary winding of transformer T-1004 provides the *plate* modulation of the transmitter radio frequency output stage.

(4) MODULATION-INDICATOR.—A 0-50 volt a-c rectifier type meter, calibrated to read *percentage modulation*, is used as the modulation indicator. This meter is coupled to the modulation (secondary) wind-

ing of T-1004 by means of capacitor C-1002 and multiplier R-1007.

k. OBSTACLE LIGHT MX-217/CRN-10.

(1) The obstacle light assembly consists of two lights and the necessary cords for connecting them to the transmitter junction box.

(2) The lights can be operated from a 115-volt, 60-cycle a-c source, a 105-volt d-c source, or a 12-volt storage battery as selected by a switch on the transmitter junction box. The lights are furnished with 12-volt and 105-volt bulbs.

l. VOLTMETER IS-176-B.

(1) This voltmeter is a radio-frequency voltmeter which measures relative (not absolute) voltages between any point and ground without disturbing conditions of the point. The relative voltages are indicated by a radio-frequency milliammeter mounted on the front panel of the case.

(2) The circuit used (see figure 4-49) consists of a short coaxial transmission line, a resonant circuit using capacitance and inductance, and a thermocouple type radio-frequency milliammeter. The tip of the instrument (see figure 6-19) is held against the line on

which the voltage is to be measured. Thus, this voltage is applied between the probe tip and the case of the voltmeter, the case being at ground potential for radio-frequency currents. A part of the voltage is dropped across capacitor C-701 between the probe tip and the coaxial line. This capacitor is made up of the head of the screw which forms the tip and the head of the screw at the input to the coaxial line in the tube of the voltmeter. This voltage finally appears across the tuned circuit connected to the output of the transmission line. The tuned circuit is made up of variable capacitor C-702, inductor L-701, and meter M-701 (see figure 4-49). The radio-frequency milliammeter M-701 reads the circulating current in the resonant circuit. This current is proportional to the voltage impressed across the circuit and is therefore proportional to the voltage on the line under test.

(3) The impedance looking into the tip of the voltmeter is very high since the energy transferred across the small capacity between the probe tip and the coaxial line of the detector is very small, and also since the short coaxial line is terminated in the high impedance of the resonant circuit (when tuned) inside the case.

1. Set the rotor in such a position that the two modulation troughs are passing equal power (the r-f voltages at the top end seals are equal). Check the r-f voltage at the output connectors to which cords CG-154/CRN-10 are normally connected. The voltage on the carrier output, color coded green, should be relatively high and should be balanced (i.e., the voltage on one pin should be within 25 percent of the voltage on the other pin). The voltage on the sideband output, color-coded orange, should be nearly zero.

2. Set the rotor in such a position that one trough is passing power and the other trough is cut-off. Check that the voltage at the carrier and sideband output plugs are nearly equal to each other (within 25 percent) and that they are balanced.

3. If the foregoing tests are satisfied, modulator and bridge MD-24/CRN-10, cord CG-153/CRN-10, and transmitter T-66/CRN-10 are probably operating satisfactorily. Cord CG-153/CRN-10 can be checked for continuity and short-circuits with the test meter. Modulator MD-24/CRN-10 can be completely checked in accordance with paragraph 3b, this section.

CAUTION

Do not overhaul the modulator without making a thorough check of the balance of the equipment. The foregoing tests may show that some fault apparently exists in the modulator. Check antenna system TS-156/CRN-10 thoroughly before proceeding with modulator repair and adjustment. Proper adjustment of the modulator can be made only when the antenna system is functioning properly.

(c) After checking the modulator and bridge MD-24/CRN-10 in accordance with the preceding paragraph, check all r-f cords and the antenna tuning unit for continuity and short circuits. Use the lowest ohmmeter scale of the test meter for continuity checks and the highest ohmmeter scale for short-circuit tests.

1. Each of the two cords CG-154/CRN-10 must have continuity from contact A of the large elbow connector to contact B of the small connector; from contact B of the large elbow connector to contact C of the small connector; and from the shell of the large elbow connector to contact A of the small connector. The seven cords CG-152/CRN-10 must have continuity from A to A, from B to C, and from C to B.

2. The small connector is constructed so that the shell is not connected to the braided shield over the cords. (See figures 8-9 and 8-20.) The continuity checks must include a test, at each small connector, for short circuits between the shell and to each contact (A, B, and C). A short between the A contact and the shell will do no harm. The split sleeve, when inserted too far, may touch the grounding wire from the shield to the A contact. However, a short between the shell and B or C indicates a defective cord. The antenna tuning unit must have continuity between the two carrier connections (color-coded green and black) B to C, and C to B; the A contacts connect to the chassis. The

orange sideband input connector must show continuity from either the B or C contact to both the B and C contacts of each of the sideband output connectors (color-coded red, blue, and yellow). The A contacts on each sideband connector is grounded. There must be no leakage from any B or C contact to ground (the A contacts), and except for the sideband connectors in the antenna tuning unit there must be no leakage between the two conductors of the circuits (contacts B and C of the small size cable connectors).

(d) If the tests made in preceding subparagraph (2) show evidence of trouble in modulator and bridge MD-24/CRN-10, and the tests made in this subparagraph above show no evidence of trouble in antenna system AS-156/CRN-10, proceed with adjustment of modulator and bridge MD-24/CRN-10 in accordance with paragraph 3b, this section.

(e) If modulator and bridge MD-24/CRN-10 is operating satisfactorily and the fault in the antenna system cannot be located by the circuit checks of the preceding subparagraph, refer again to table 5-1 and check each of the probable sources of trouble. Trouble in the antenna system can in almost all instances be isolated by careful visual inspection and the preceding circuit checks given in this subparagraph (3). If, for any reason the fault is persistently overlooked, proceed with the following radiation checks of the sideband patterns.

1. Dismount all antenna assemblies AS-155/CRN-10, except the first sideband pair ("SB1R" and "SB1L" of figures 8-21 and 2-3). Disconnect all cords CG-152/CRN-10 from the antenna tuning unit except the blue-coded pair (19'9"). Disconnect both cords CG-154/CRN-10 from modulator and bridge MD-24/CRN-10, and make a temporary connection of the sideband cord (coded orange) to the carrier output of the modulator (coded green).

2. Remove modulator front panel and rotate rotor blades to such a position that a 150-cycle blade is nearly meshed with its stator plates when a 90-cycle blade is nearly meshed with its stator plates. The object is to obtain equal maximum engaging of the stators. These temporary connections will feed a relatively large amount of power to the first sideband pair above. It is good practice to check the "P.A. PLATE" tuning (for minimum plate current) meter position No. 6, when checking static radiation patterns or when the transmitter is operated for any test purpose other than normal operating conditions.

3. Check the radiation pattern with portable course detector TS-179/CRN-10 and compare it with figure 4-33. The positive and negative lobes shown in the figure will appear the same on the meter. The radiation pattern is obtained by reading diode current (switch position 6) on the portable course detector at various angles off course and at a constant distance of 200 feet from the center of the antenna array. Set the "M.V.C.-A.V.C." switch to "M.V.C." and adjust the "INPUT TUNING" control to give a large deflection

(nearly full scale) at 30 degrees off course in either direction. The reading should be zero at the *on course* position, and should rise to a maximum at 30 degrees off course in either direction and should decrease approximately as shown in figure 4-33 to a low value at 90 degrees off course in either direction. The value of the readings at 90 degrees off course in either direction are not important, but they must be nearly equal (within 25 percent). The readings between 90 degrees and 180 degrees off course in either direction will be lower than the readings between 0 degrees and 90 degrees off course because of the directive action of antenna assembly AS-155/CRN-10. The actual values of these readings are not important, but they must be nearly equal at the same angle off course in either direction.

Note

The values of the readings are dependent on the slope of the ground and the nature of surrounding objects. Do not expect precise readings. If the reading falls to zero on course and rises to maxima at approximately the correct angles off course, the antennas and cords are operating satisfactory.

4. Repeat this test using first the second and then the third sideband pairs of antennas and cords. Check the location of the nulls (zero reading of the meter). The meter must read zero on course. Minimums must be obtained at approximately the angles off course at which figure 4-33 shows zero signal (the curve crosses the zero axis).

5. When a faulty sideband pair is isolated, replace the antennas, one at a time, with the spare antenna to determine whether the fault lies in either antenna. If the fault is not in the antenna, reconnect the antenna feed cords to different outputs in the antenna tuning unit.

EXAMPLE

The first pair radiation pattern may be found faulty, but the second pair radiation pattern may be satisfactory. Temporarily connect the first pair cable (color-coded blue) to the second pair receptacles of the antenna tuning unit (color-coded yellow). This will check the first pair cables, for the antennas as well as the second pair output receptacles are known to be good. If the cables are at fault check for continuity to determine which of the two are at fault. If good, the trouble must be in the antenna tuning unit between the first pair tap and the first pair output receptacles.

6. These tests, logically performed, will isolate the trouble in either the antenna tuning unit, a cord, or an antenna.

3. SERVICE ADJUSTMENT AND REPAIR PROCEDURE.

Note

Do not operate the transmitter with cord CG-153/CRN-10 disconnected.

a. RADIO TRANSMITTER T-66/CRN-10.

(1) Inspection to determine the proper operation of the equipment can be carried out by means of the "TUNING IND." meter in conjunction with the operation of the "TUNING IND. SW." and a comparison of the readings obtained with those listed on the "TUNING CHART." If the trouble cannot be localized in this manner, make a systematic investigation of voltages as listed in table 5-3, this section.

(2) Check the spacing between the output coupling coils L-117 and L-118. The air space between the two coils must be 0.3125 inch (5/16 inch).

(3) The cause of trouble may frequently be localized quickly by reference to table 5-2 for possible troubles and their causes.

TABLE 5-2. TROUBLE SHOOTING CHART—RADIO TRANSMITTER T-66/CRN-10

COURSE SWITCH IN "COURSE" POSITION

<i>Symptoms</i>	<i>Probable Cause</i>
Filament "ON" pilot light does not light.	Main fuse F-202 in transmitter-junction box may be blown. (See figure 6-5.)
Power "ON" pilot light does not light in transmitter-junction box.	Power plug or power supply chassis not connected or making poor contact.
Ventilating blower B-101 not operating.	Any of the above causes. Fuse F-101 blown, a-c plugs not making good contact on rear of power supply chassis.
Rectifier tubes V-102 to V-105 filaments do not light.	Fuse F-103 blown.

(6) Make plate and screen current measurements for tubes in the r-f section of transmitter as follows:

(a) Remove the chassis from the cabinet as directed in paragraphs 4a through g, this section.

(b) Use a 1000-ohm-per-volt meter (Weston 775 meter, or equivalent) to make the plate and screen current measurements for the tubes listed in table 5-4.

Note

These are typical middle-frequency operating values subject to differences due to variations in tube and load conditions.

TABLE 5-4. PLATE AND SCREEN CURRENTS FOR TUBES IN R-F SECTION OF TRANSMITTER

Tube Reference Symbols	V-101 Oscillator	V-106 First Multiplier	V-107 Second Multiplier	V-109 V-110 Power Amplifier (2 tubes)
Plate Current (ma)	40	65	135	250
Screen Current (ma)	2	5	20	35

(7) Make transmitter resistance values as follows:

(a) Connect this equipment for normal operation.

(b) Remove the transmitter chassis from the case as described in paragraphs 4a through f, this section.

(c) Leave the power switch in the "OFF" position.

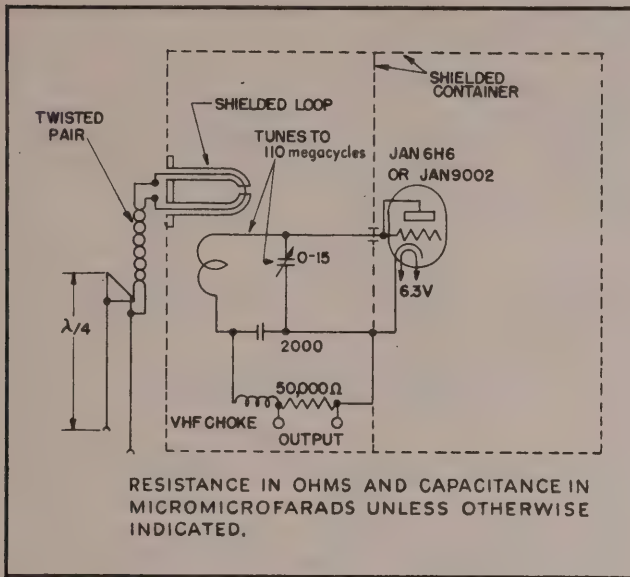


Figure 5-4. V.H.F. Diode Detector—Schematic Diagram

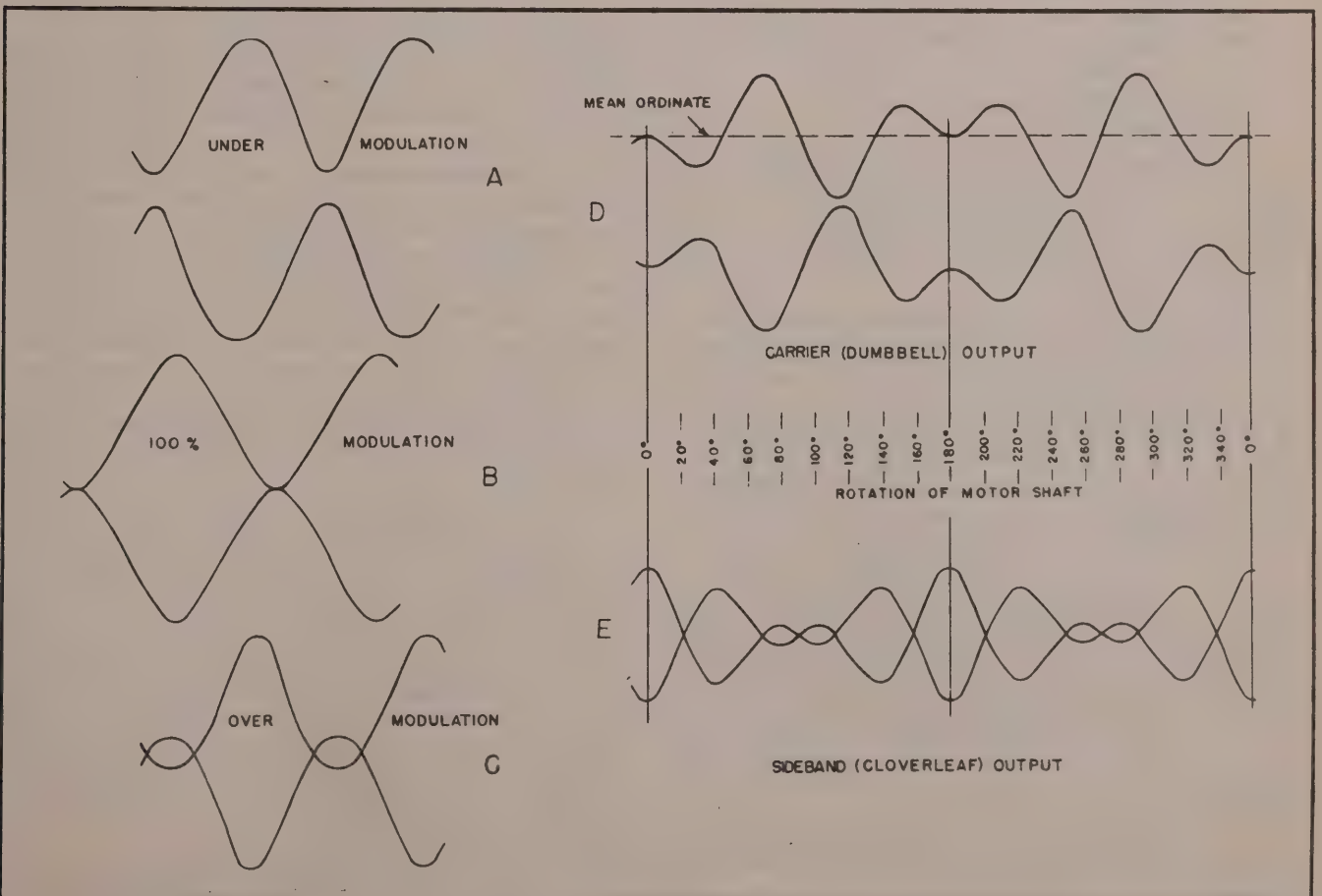


Figure 5-5. Oscilloscope Patterns

(d) Make the resistance measurements from the terminals to ground as shown in table 5-5.

TABLE 5-5. TERMINAL RESISTANCE MEASUREMENTS

Measurements made		Resistance Values (ohms)
from Terminal	To	
No. 1	Chassis	1.5
No. 2	Chassis	0
No. 3	Chassis	605
No. 4	Chassis	605
No. 5	Chassis	0
No. 6	Chassis	7,190
No. 7	Chassis	8,300
No. 8	Chassis	15,480

b. MODULATOR AND BRIDGE MD-24/CRN-10.

CAUTION

This modulator and bridge is constructed so that it is the least probable source of trouble of any of the components. Faults in antenna system AS-156/CRN-10 will react upon the modulator and bridge and give indication which may be mistaken as symptoms of trouble in the modulator. *Do not* change any adjustments in the modulator and bridge unless the adjustments are obviously loose and have been displaced until the fault is definitely located by complete checks.

(1) PROBABLE CAUSES OF FAULTY OPERATION.

(a) MOTOR NOT RUNNING PROPERLY.—

Motor B-501 may stall or fail to operate at synchronous speed; if so the "COURSE OFF" light on indicator ID-70/CRN-10 or ID-70A/CRN-10 will light showing an absence of the course.

(b) OPEN CIRCUIT OR SHORT CIRCUITS IN MODULATION WIRING.—Open circuits or short circuits in the radio-frequency wiring of the modulator and bridge can produce false courses, course shift, low sharpness, or low clearance, depending upon the location of the fault. Open circuits or short circuits may be located by the procedure given in the following subparagraphs (2) to (4), inclusive.

(c) MODULATOR CHANNELS.

1. UNDER MODULATION.—Under modulation in either or both of the channels will usually result in low clearance and low sharpness. The low clearance and sharpness will be particularly evident when checking the localizer with the aircraft receiver.

2. OVER MODULATION. — Extreme over modulation in either or both of the modulation channels may result in low clearance.

3. UNEQUAL OUTPUTS FROM THE TWO MODULATION CHANNELS.—If the power output of

the two modulation channels is not the same and the modulation percentage are not equal, the clearance will usually be low, and the course will be shifted.

(d) INPUT STUB MISADJUSTED.—The input stub and building out section of figure 4-20 has been factory adjusted to obtain the maximum power from the transmitter; its adjustment is not critical.

(e) CROSS MODULATION CONTROL IMPROPERLY ADJUSTED.—Improper adjustment of the cross modulation control (see figure 4-20) will result in low sharpness and may result in low clearance and occasionally in excessive sharpness.

Note

Rectify immediately the faults discovered through checks in the following subparagraphs (2) through (4).

(2) CHECKING THE OPERATION OF MOTOR B-501.

(a) This motor may not start and may not pull into synchronism immediately after voltage is applied to its terminals. In very cold temperatures, it may take 1 minute or more from the time the voltage is applied to the time the motor starts to turn over. See table 5-10 in paragraph 6, this section, for proper lubrication. If the temperature is below -45°C (-49°F), give it a hand start.

(b) The motor is protected by a thermal cut-out which will open the motor circuit if the temperature of the motor rises excessively. In such a case, allow the motor to cool before attempting to start it. When the cut-out is closed, turn the "COURSE SWITCH" on and rotate the motor by hand. If the motor starts and runs at synchronous speed, capacitor C-501 is probably open. If the motor starts and runs at about half synchronous speed with apparent high current, capacitor C-501 is probably shorted. If the motor will not start remove the cover from the motor circuit junction box and test for voltage at the input of the motor connecting cable. If no voltage is read, investigate the motor wiring and control circuit of radio transmitter T-66/CRN-10. If the tests indicate that the thermal cut-out is closed, that capacitor C-501 is not faulty, and that power is being applied to the motor, replace motor B-501.

(c) If the motor is not in synchronism, it will rock slowly in its cradle and give a periodic groaning noise. Check to see that the motor is well oiled and that its bearings are not binding. Check the voltage at the terminals of the motor by removing the front cover from the motor circuit junction box (see figure 4-14) and reading the voltage input of the motor connecting cable. This voltage should be above 100 volts in temperate climates and 110 volts in cold climates. If the voltage is low, investigate the wiring of the motor. If it becomes necessary to remove the motor for a major overhaul, follow the dismantling instructions in paragraph 3b(8), this section.

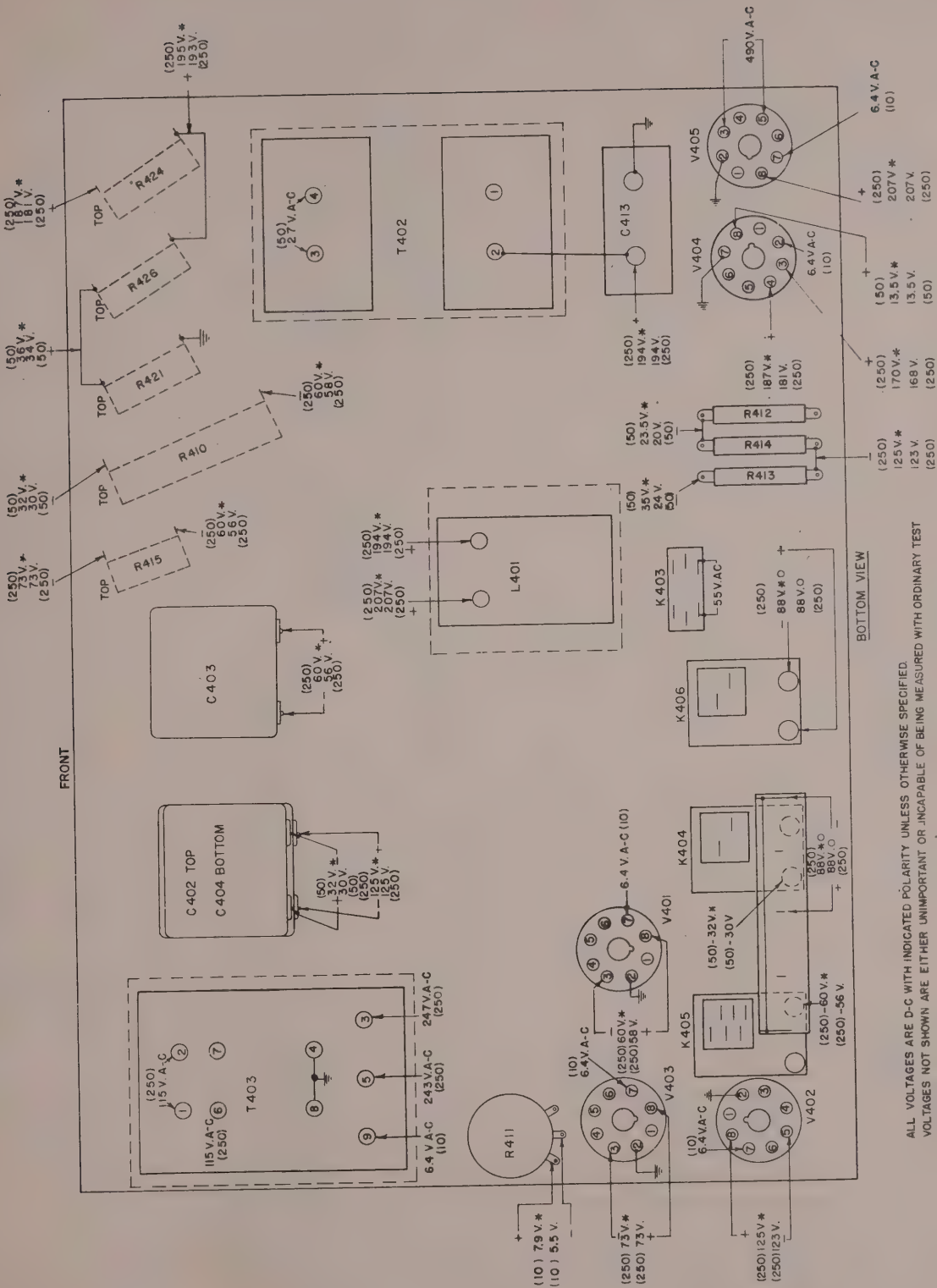


Figure 5-6A. Indicator ID-70A/CRN-10—Voltage Checking Diagram

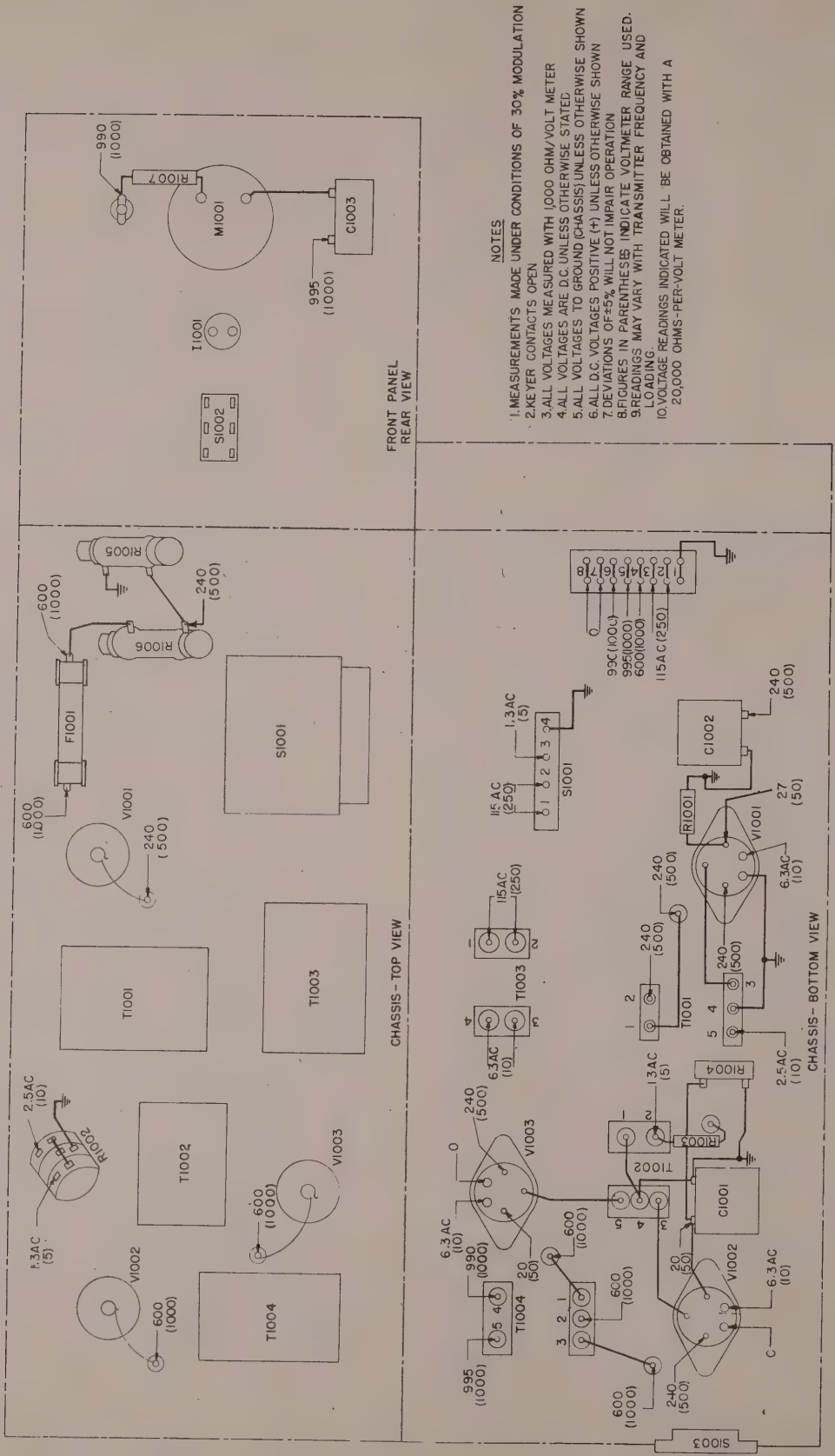


Figure 5-6B. Modulator MD-49/CRN-10—Voltage Checking Diagram

(b) With the course detector located on course, or with the antenna terminals connected to test set TS-67, turn the "MET. SWITCH" on course detector TS-179/CRN-10 to position "6," and read the diode detector current. If normal diode current indication is obtained when the unit is tuned, then the fault is probably in the audio amplifier circuit.

(c) Turn the meter switch to position "5," and with the localizer turned on, try to obtain some filter voltage indication. If the voltage at the input to the filters is normal, then the trouble is probably in the filter circuit. (See figure 4-48.)

(d) If no diode indication is obtained in step (b) above, the trouble may be in either the detector, intermediate-frequency amplifier, mixer, or oscillator.

(e) When the trouble has been isolated, check the tubes in that circuit. Next check all the socket voltages as listed in table 5-8 and the voltages listed in figure 5-6. If the voltage at any point is lower than shown, check the capacitors, resistors, and soldered connections which are connected to that point, for open or short circuits.

TABLE 5-8. COURSE DETECTOR TS-179/CRN-10—
TUBE SOCKET VOLTAGES

Tube	Socket Terminal	Element	Voltages to ground measured with a 1000-ohm-per-volt voltmeter
V-601	1	Filament+	1.5
	2	Plate	88
	3	Grid	0
	4	Filament—	0
	5	Filament—	0
V-602	1	Filament—	0
	2	Plate	82
	3	Grids #2 and #4	60
	4	Grid #1	0
	5	Filament—	0
	6	Grid #3	0
	7	Filament+	1.5
V-603 and V-604	1	Filament+	1.5
	2	Plate	86
	3	Screen	86
	4	Suppressor	0
	5	Filament—	0
	6	Grid (AVC-ON)	0
	7	No connection	-
	8	Filament—	0
V-605	1	Filament—	0
	2	No connection	-
	3	Diode Plate	0
	4	Pentode Screen	3
	5	Pentode Plate	4
	6	Pentode Grid	0
	7	Filament+	1.5
V-606	1	Filament+	1.5
	2	Plate	75
	3	Grid	1
	4	Screen	75
	5	Filament—	0
	6	Plate	75
	7	Filament—	1.5

(5) SIGNAL INPUT FOR RATED OUTPUT.— With the voltage inputs applied according to table 5-9, a rated output should be obtained. (Rated output means a reading of 70 microamperes on the meter with the "MET. SWITCH" at "5," and the "A.F. GAIN" control at maximum gain.) Inability to obtain rated output indicates the need for service.

TABLE 5-9. CHART OF SIGNAL INPUT
FOR RATED OUTPUT

Signal Applied Across	Voltage	Frequency
Resistor R-628	8.5	90 and 150 cycles
Grid of V-606 and ground	7.5	90 and 150 cycles
Potentiometer R-622 (turned to max. gain. A.V.C.-ON)	0.2	90 and 150 cycles
Grid of V-603 and ground	0.080	10.5 mc modulated 50% at 400 cycles
Grid of V-603 and ground (A.V.C.-ON)	0.010	10.5 mc modulated 50% at 400 cycles
Coil L-603 with C-604 set at 100 (A.V.C.-ON)	0.045	10.5 mc modulated 50% at 400 cycles
Coil L-603 coupled to signal generator	0.0035	110 mc modulated 50% at 400 cycles

g. MODULATOR MD-49/CRN-10.

(1) PERCENTAGE MODULATION. — The extent to which the output of Radio Transmitter T-66 CRN-10 may be modulated by means of Modulator MD-49/CRN-10 may be varied between zero and about 40 percent without excessive distortion. The modulation regulating device is R-1002, a 600-ohm T-pad attenuator, mounted on the top right hand side of the chassis, near the rear. The shaft is provided with a screwdriver slot and a lock.

Before leaving the factory each modulator is set to produce approximately 30 percent modulation. If at any time it becomes necessary or desirable to alter this setting, proceed according to the following instructions:

1. Turn off the modulation switch; also the power at the transmitter junction box.

2. Pull the modulator chassis part way out of the cabinet.

3. Remove the cam cover of the keyer (S-1001) and place a small piece of insulating material between the contacts so that they will stay open when the keyer motor is running.

4. Loosen the shaft lock of R-1002.

5. Short the interlock terminals at the rear by means of a piece of wire or a male section, or at the terminal board underneath (terminals 7 and 8).

6. Turn on the junction-box power switch and wait for the transmitter plate pilot lamp to light.

7. Note the reading on the modulation meter. (This may be around 6 percent and is due to reflection of 90- and 150-cycle energy from Modulator MD-24 CRN-10. When this modulator is not running the reading is zero.)

8. Turn on the "MODULATION" switch.
9. Add the reading in the off position to the desired percentage and set R-1002 so that the meter reads the sum of these two figures.

WARNING

Be careful not to touch any other point on the chassis since voltages up to 1500 may be present.

10. Lock the shaft of R-1002.
11. Shut off the power at the junction box.
12. Remove the short from the interlock terminals.
13. Remove the spacer from between the contacts of keyer S-1001 and replace the cam cover.
14. Replace the modulator chassis in the cabinet and turn on the power.

(2) POSSIBLE TROUBLES AND THEIR CAUSES.

<i>Symptom</i>	<i>Probable Cause</i>
No indication on modulation meter with switch and pilot light on and transmitter output normal.	Fuse F-1001 open
No transmitter output or modulation indication with modulator plugged in and power on.	Interlock circuit open

4. SUMMARY OF INSTRUCTIONS FOR THE DISASSEMBLY OF UNITS.

In removing the several units from their cabinets and in servicing, follow the procedure outlined below to prevent damage to the equipment.

a. RADIO TRANSMITTER T-66/CRN-10.

- (1) Unfasten the six catches which hold the rear cover in place and remove the cover.
- (2) Disconnect AN3108-22-135 power input connector at the rear right edge of the lower chassis (power supply chassis).
- (3) Loosen all lug setscrews which hold cabled leads on the terminal board and posts at the rear of the lower chassis and pull out the leads.
- (4) Pull the cabled leads, loosened in the preceding paragraph through the hole and up to the top chassis. All leads are now free. To remove either chassis:

b. COURSE DETECTOR TS-179/CRN-10.

- (1) Unfasten the four catches holding the rear cabinet cover and remove the cover.

- (2) Loosen and remove all battery leads.
 - (3) Loosen the four knurled thumbscrews, holding the panel in the cabinet, by turning them counterclockwise.
 - (4) Withdraw the chassis from the cabinet.
- c.* INDICATOR ID-70/CRN-10 OR ID-70A/CRN-10.
- (1) Remove all cord plugs attached to connectors on the face of the panel.
 - (2) Loosen the twelve knurled thumbscrews, holding the panel in the cabinet, by turning them counterclockwise.
 - (3) Withdraw the chassis from the cabinet.
- d.* COURSE MONITOR TS-180/CRN-10.
- (1) Unfasten the four catches holding the cabinet cover and remove the cover.
 - (2) Detach AN3106-18-9P connector, on the chassis cord, from the cabinet receptacle.
 - (3) Loosen the five roundhead machine screws holding the panel in the cabinet by turning them counterclockwise.
 - (4) Withdraw the chassis from the cabinet.

e. MODULATOR AND BRIDGE MD-24/CRN-10.

Disassembly of the modulator is not as simple a procedure as in the foregoing instances. Therefore, refer to section V, paragraph 3.b.(8) for instructions.

f. ANTENNA TUNING UNIT TN-71/CRN-10.—To disassemble the antenna tuning unit, loosen the six cover retaining catches and lift off the cover.

WARNING

The tuning adjustments on the antenna tuning unit have been made permanently at the manufacturer's plant. *Do not* replace any elements in this unit *except* receptacles and insulators. Any other troubles will be traced to other defective items of equipment.

g. VOLTMETER IS-178-B (UNBALANCED).—To disassemble the voltmeter, remove the handle portion of the cover by turning the roundhead machine screws in a counterclockwise direction.

5. MAINTENANCE PARTS.

Since radio set AN/CRN-10 is trailer mounted, with only limited space for replacement parts, the quantity of such parts has been reduced to a minimum. Three storage spaces have been provided. The spare tubes and dial lamps are packed in tube case CY-242/CRN-10 which has been built into the front panel of modulator and bridge MD-24/CRN-10. (See figure 4-18.) The spare length of radio-frequency cable is packed in cable case CY-241/CRN-10. Spare connectors and fuses are packed in chest CY-184/CRN-10.

6. FUEL AND LUBRICATION DATA.

(See table 5-10.)

TABLE 5-10. FUEL AND LUBRICATION CHART

Major Assembly	Part	Type of Lubrication	Quantity of Lubrication	Lubrication Period	Procedure	-65° F to -40° F	-40° F to -10° F	-10° F to +32° F	+32° F to +100° F	+100° F to +160° F
Radio Transmitter T-66/CRN-10	Blower Motor	Oil	30 Drops per bearing	Every 1000 hours of operation	Oil front and rear bearings with about 30 drops of mineral lubricating oil every 1000 hours of operation.			SAE 20	SAE 20	SAE 30
								Spec. 2-104-B		
Modulator and Bridge MD-24/CRN-10	Modulator Motor	Oil	30 Drops per bearing	Every 1000 hours of operation	Open oil cup covers on both sides of the motor and oil with about 30 drops of the specified lubricant.				AN-06A	

Lubrication Designation	Specifications				NOTES
	AN	ARMY	NAVY	BRITISH	
Oil		2-104-B			1. Do not over-oil. Over-oiling is as undesirable as under-oiling.
Oil	AN-06A				2. AN-06A oil is especially suited to lubrication over a wide range of temperatures.

SECTION VI

SUPPLEMENTARY DATA

1. TUBE COMPLEMENT.

(See table 6-1.)

TABLE 6-1. TUBE COMPLEMENT OF RADIO SET AN/CRN-10

Reference Symbol	Stock No.	Type Designation		Function	Location of Spares
		JAN	VT		
V-101	2J807	JAN-807	VT-100	R.F. Oscillator	All spares are located in Chest CY-242/CRN-10
V-102	2J836	JAN-836	VT-236	L.V. Rectifier	
V-103	2J836	JAN-836	VT-236	L.V. Rectifier	
V-104	2J836	JAN-836	VT-236	H.V. Rectifier	
V-105	2J836	JAN-836	VT-236	H.V. Rectifier	
V-106	2J807	JAN-807	VT-100	1st Multiplier	
V-107	2J4E27	JAN-4E27	2nd Multiplier	
V-108	2J5U4G	JAN-5U4G	VT-206-A	Bias Rectifier	
V-109	2J4E27	JAN-4E27	1st Power Amplifier	
V-110	2J4E27	JAN-4E27	2nd Power Amplifier	
V-111	2J6H6	JAN-6H6	VT-90	Monitor	
V-301	2J9002	JAN-9002	VT-202	Detector	
V-401	2J2051	JAN-2051	VT-109	Alarm Delay	
V-402	2J6H6	JAN-6H6	VT-90	Alarm Rectifier	
V-403	2J2050	JAN-2050	VT-245	Alarm	
V-404	2J6K6GT	JAN-6K6GT	VT-152	Amplifier	
V-405	2J6X5GT	JAN-6X5GT	VT-126-B	Rectifier	
V-601	2J957	JAN-957	VT-237	Oscillator	
V-602	2J1R5	JAN-1R5	VT-171	Mixer	
V-603	2J1LN5	JAN-1LN5	VT-179	1st I.F. Amplifier	
V-604	2J1LN5	JAN-1LN5	VT-179	2nd I.F. Amplifier	
V-605	2J1S5	JAN-1S5	VT-172	Det. A.F. Amplifier	
V-606	2J3S4	JAN-3S4	VT-174	A.F. Output	
V-1001	2J807	JAN-807	VT-100	Oscillator	
V-1002	2J807	JAN-807	VT-100	Modulator	
V-1002	2J807	JAN-807	VT-100	Modulator	

2. FREQUENCY RANGE.

The frequency range of radio set AN/CRN-10 is 108.3 to 110.3 megacycles.

3. NUMBER OF PRESET FREQUENCIES.

Six crystals are provided for use with the equipment. The crystal frequencies and corresponding transmitter output frequencies are listed in table 6-2.

TABLE 6-2. CRYSTAL AND TRANSMITTER
OUTPUT FREQUENCIES

Crystal Identification Letter	Marked Crystal Frequency (Kilocycles)	Transmitter Output Frequency (Megacycles)
U	6016.66	108.3
V	6038.88	108.7
W	6061.11	109.1
X	6083.33	109.5
Y	6105.55	109.9
Z	6127.77	110.3

4. TRANSMITTER OUTPUT OVER FREQUENCY RANGE.

The transmitter output is 110 watts on all frequencies. The line ratio is 1.05 or better.

5. PEAK POWER OUTPUT.

The peak power output of the transmitter is 110 watts.

6. POWER SUPPLY.

a. The d-c power supply is as follows:

(1) A runway supply of 105 volts direct current (for obstacle lights only).

(2) A battery supply of 12 volts direct current (for obstacle lights and radio set SCR-610-()*).

b. The a-c power supply may be any one of the following:

(1) Power unit PU-25/CRN which provides 115 volts, 60 cycle alternating current.

(2) Commercial mains which provide 115 volts, 60 cycle alternating current.

(3) Commercial mains which provide 115 volts, 50 cycle alternating current (with the use of converter unit PU-15/CRN-2).

c. The power factor is 93 percent.

7. CURRENT REQUIRED AT SPECIFIC RATED VOLTAGES.

(See table 6-3.)

TABLE 6-3. CURRENT REQUIREMENTS

FILAMENT	
Radio Transmitter	15.0 amperes at 2.5 volts
	24.5 amperes at 5.0 volts
	2.1 amperes at 6.3 volts
Indicator Box	2.5 amperes at 6.3 volts
Course Monitor	0.15 amperes at 6.3 volts
Course Detector	0.05 amperes at 1.25 volts
	0.30 amperes at 1.4 volts
Modulator MD-49/CRN-102.7	amperes at 6.3 volts

POWER SUPPLIES

Radio Transmitter	9.0 amperes
High-voltage Power Supply	3.8 amperes
Low-voltage Power Supply	2.9 amperes
Indicator	0.45 amperes

OBSTACLE LIGHTS

105 volts d-c supply	0.5 amperes
12 volts d-c supply	4.0 amperes
115 volts d-c supply	0.5 amperes
Total Current Drain	12.5 amperes at 115 volts
Standby	0 amperes at 115 volts
Maximum Starting (normal) .20	amperes at 115 volts
(abnormal) .30	amperes at 115 volts

8. MODULATION CAPABILITY.

100 percent by mechanical-course-producing modulator; 40 percent by identification modulator.

9. TYPES OF MODULATION.

Mechanical by controlled; electronically controlled.

10. METHOD OF MODULATION.

Sinusoidal absorption which at negative peaks blanks the r-f energy, in mechanical modulator; d-c plate supply modulation in P.A. output stage for identification.

11. DESIGN PERFORMANCE AND LIMITATIONS SUMMARY.

a. RADIO SET AN/CRN-10.—This is an instrument landing localizer of the Army Air Forces Instrument Approach System (formerly known as the SCS-51). Its characteristics are as follows:

- (1) Frequency range: 108.3 to 110.3 megacycles.
- (2) Frequency tolerance: 0.013 percent on any of the six design frequencies.
- (3) Modulated carrier output: 35 watts plus or minus 10 percent.

(4) Alternate power supply requirements: 115-volt, 50-cycle supply through the use of a 50- to 60-cycle converter unit PU-15/CRN-2.

b. RADIO TRANSMITTER T-66/CRN-10.—The characteristics of this transmitter are as follows:

(1) Frequency range: 108.3 to 110.3 megacycles and may be used at any frequency within this range by the insertion of the proper crystal.

(2) Crystals are used with the transmitter to give the following six output frequencies: 108.3, 108.7, 109.1, 109.5, 109.9, and 110.3 megacycles. (The crystals are supplied.)

(3) Frequency tolerance: 0.013 percent on any of the above six frequencies.

(4) Maximum power output (modulator and bridge MD-24/CRN-10 not running): 100 watts plus or minus 10 percent.

Note

If radio transmitter T-66/CRN-10 is to be operated with the front cover removed, take the air-filter out of the front cover and install it in the panel of the power supply section. Always open the air-intake hatch on the front cover before turning on the transmitter.

c. MODULATOR AND BRIDGE MD-24/CRN-10.

(1) General design characteristics: Receives the radio-frequency energy supplied by the transmitter and divides it into two equal channels and mechanically modulates each channel, one at 90 cycles and the other at 150 cycles. Modulation in each channel is 100 percent. It delivers sideband and carrier energy to the antenna system.

(2) Power output to antenna system: 35 watts plus or minus 10 percent.

d. ANTENNA SYSTEM AS-156/CRN-10.

(1) ANTENNA TUNING UNIT TN-71/CRN-10.—General design characteristics: receives sideband and carrier energy from mechanical modulator; passes carrier energy to carrier antenna; divides sideband energy into proper amplitudes; and passes sideband energy to sideband antennas.

(2) ANTENNA ASSEMBLY AS-155/CRN-10.—Type of antenna: broad-band type of folded dipole antenna with director.

e. COURSE DETECTOR TS-179/CRN-10.

(1) Type of circuit: sharply tuned superheterodyne receiver.

(2) General design characteristics: discriminates between 90- and 150-cycle modulated radio-frequency energy and indicates the relative strengths of the two signals by the use of a meter; is used to locate and position localizer course; and is also used to measure clearance and other characteristics of the course.

(3) Frequency range: 108.3 to 110.3 megacycles.

(4) Type of power supply: battery-powered.

f. COURSE MONITOR TS-180/CRN-10.

(1) Type of circuit: grid-leak detector circuit equipped with an audio-output transformer.

(2) General design characteristics: equipped with a meter for course indication; supplies rectified 90- and 150-cycle audio signal to the indicator ID-70/CRN-10 through cord CX-244/CRN-10; receives filtered and rectified 90- and 150-cycle audio signal from indicator ID-70/CRN-10 or ID-70A/CRN-10 through cord CX-244/CRN-10 for operation of its course meter; receives plate and filament voltage for the operation of its detector tube from indicator ID-70/CRN-10 or ID-70A/CRN-10 through cord CX-244/CRN-10.

g. MODULATOR MD-49/CRN-10. (*Station identification Modulator*)

(1) Type of circuit. 1020-cycle vacuum tube oscillator and a push-pull modulator amplifier stage.

(2) General design characteristics: produces coding through the use of a motor driven keyer which is so connected that it periodically short circuits the oscillator output in accordance with a preadjusted setting of the keyer cam. (The modulator is adjusted at the manufacturer's plant so that it will cause a 30 percent modulation of the carrier.)

(3) Power source: power (60-cycle a-c) for the operation of the keyer motor, indicator light, and filament transformer is obtained from the 115-volt transmitter supply. The d-c plate power for tube operation is obtained from the transmitter low-voltage power supply. All of the above power is transmitted over a single cable from the transmitter cabinet.

h. INDICATOR ID-70/CRN-10 or ID-70A/CRN-10.

(1) Function: an instrument which provides, at the trailer, a remote indication of the course monitoring furnished by course monitor TS-180/CRN-10 as well as visual and aural alarm signals.

Note

This device is incapable of operation without the use of Course Monitor TS-180/CRN-10.

(2) General design characteristics: receives and amplifies the 90- and 150-cycle signals from course monitor through cord CX-244/CRN-10; operates to give meter indication of *course level*; operates to give meter indication of *course*; operates to give audible and visual alarm indications for course deviation of over $\frac{1}{4}$ degree; operates to give audible and visual alarm indications when field intensity drops 50 percent or more.

i. VOLTMETER IS-176-B.

(1) Type of circuit: this device consists of a tunable circuit made up of inductance L-701; variable capacitor C-702; variable pick-up capacitor C-701 (probe tip); and radio-frequency meter M-701.

(2) General design characteristics: may be resonated at any point from 108.3 to 110.3 megacycles; and is used as a radio-frequency voltmeter to measure relative radio-frequency voltages.

j. CORD CX-244/CRN-10.—This cord is a seven-conductor cable between course monitor TS-180/CRN-10 and indicator ID-70/CRN-10. The characteristics of this cord are as follows:

(1) Total length: 225 feet.

(2) Function: transmits plate, filament, and rectified audio signal from indicator ID-70/CRN-10 to course monitor TS-180/CRN-10.

(3) Type of fittings: equipped with AN type connectors.

k. CORD CG-153/CRN-10 (6 feet, 1-13/16 inches).—This cord is a two-conductor shielded cable between radio transmitter T-66/CRN-10 and modulator and bridge MD-24/CRN-10. Characteristics of this cord are as follows:

(1) Total length: 6 feet, 1-13/16 inches. (This length is critical within $\frac{1}{8}$ of an inch.)

(2) Function: transmits (unmodulated) radio frequency from radio transmitter T-66/CRN-10 to modulator and bridge MD-24/CRN-2.

(3) Type of conductor: insulation polyethylene.

(4) Type of fittings: equipped with AN type connectors.

l. CORD CG-154/CRN-10 (47 feet, 11 inches).—This cord is a two-conductor shielded cable between modulator and bridge MD-24/CRN-10 and antenna tuning unit TN-71/CRN-10. The characteristics of this cord are as follows:

(1) Total length: 47 feet, 11 inches. (This length is critical within $\frac{1}{4}$ of an inch.)

(2) Function: transmits radio-frequency sideband energy from modulator and bridge MD-24/CRN-10 to antenna tuning unit TN-71/CRN-10.

(3) Type of conductor: insulation polyethylene.

(4) Type of fittings: equipped with AN type connectors.

m. CORD CG-154/CRN-10 (47 feet, 9 inches).—This cord is a two-conductor shielded cable between modulator and bridge MD-24/CRN-10 and antenna tuning unit TN-71/CRN-10. Characteristics of this cord are as follows:

(1) Total length: 47 feet, 9 inches. (This length is critical within $\frac{1}{4}$ of an inch.)

(2) Function: transmits radio-frequency carrier energy from modulator and bridge MD-24/CRN-10 to antenna tuning unit TN-71/CRN-10.

(3) Type of conductor: insulation polyethylene.

(4) Type of fittings: equipped with AN type connectors.

n. CORD CG-152/CRN-10 (24 feet, 7 inches).—This cord is a two-conductor shielded cable between antenna tuning unit TN-71/CRN-10 and the carrier antenna. Characteristics of this cord are as follows:

(1) Total length: 24 feet, 7 inches. (This length is critical within $\frac{1}{4}$ of an inch.)

(2) Function: transmits radio-frequency carrier energy from antenna tuning unit TN-71/CRN-10 to

the carrier antenna.

(3) Type of conductor: insulation polyethylene.

(4) Type of fittings: equipped with AN type connector.

o. CORD CG-152/CRN-10 (19 feet, 9 inches).— These cords (two used) are two-conductor shielded cables between antenna tuning unit TN-71/CRN-10 and the two antennas adjacent to the carrier antenna. Characteristics of these cords are as follows:

(1) Total length: (of each cord) 19 feet, 9 inches. (This length is critical within $\frac{1}{4}$ of an inch.)

(2) Function: transmits radio-frequency energy for antenna tuning unit TN-71/CRN-10 to the inner

pair of sideband antennas.

(3) Type of conductor: insulation polyethylene.

(4) Type of fittings: equipped with AN type connectors.

p. CORD CG-152/CRN-10 (28 feet, 3 inches).— These cords (two used) are two-conductor shielded cables between antenna tuning unit TN-71/CRN-10 and the middle pair of the sideband antennas. Characteristics of these cords are as follows:

(1) Total length: (of each cord) 28 feet, 3 inches. (This length is critical within $\frac{1}{4}$ of an inch.)

(2) Function: transmits radio-frequency energy from antenna tuning unit TN-71/CRN-10 to the mid-

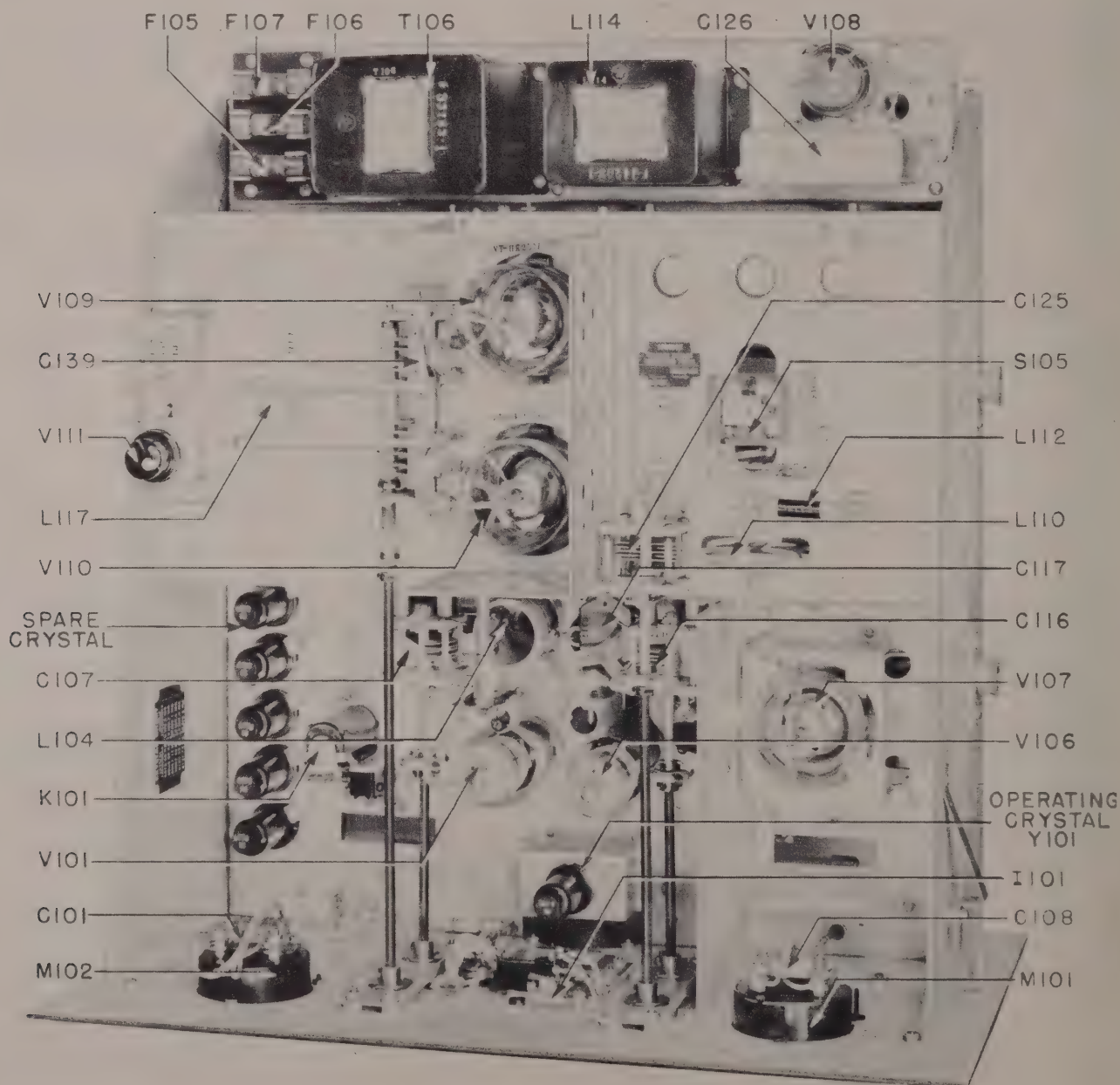


Figure 6-1. Radio Transmitter T-66/CRN-10—Top View of Chassis

dle pair of the sideband antennas.

(3) Type of conductor: insulation polyethylene.

(4) Type of fittings: equipped with AN type connectors.

q. CORD CG-152/CRN-10 (34 feet, 2 inches).—These cords (two used) are two-conductor shielded cables between antenna tuning unit TN-71/CRN-10 and the outside pair of the sideband antennas. Characteristics of these cords are as follows:

(1) Total length: (of each cord) 34 feet, 2 inches. (This length is critical within $\frac{1}{4}$ of an inch.)

(2) Function: transmits radio-frequency energy from antenna tuning unit TN-71/CRN-10 to the outside pair of the sideband antennas.

(3) Type of conductor: insulation polyethylene.

(4) Type of fittings: equipped with AN type connectors.

12. UNIQUE OPERATION FEATURES.

a. SIMPLICITY OF CONTROL.—Once installed and properly adjusted, the equipment may be turned "ON" or "OFF" by the manipulation of one switch; i.e., the "POWER SUPPLY" switch located in the junction box.

b. CHANGING COURSE DIRECTION. — Course direction may be changed by shifting the position of the antenna array and course monitor.

13. LIMITATION OF RANGE, LINE OF SIGHT.

Radio-frequency waves at localizer frequencies of 108.3 to 110.3 megacycles have characteristics approaching those of sight line transmission. In other words, a

radiated wave at these frequencies acts somewhat like a light ray in that it may be reflected or clocked off by an intervening object. The effective range of the localizer course is a function of the elevation of the receiving antenna.

14. SUPPLEMENTARY INFORMATION.

a. REMOVAL OF SNOW FROM ANTENNAS.—When a quantity of wet snow settles on the antennas, the radiation pattern is affected and a course shift may result. Therefore, remove heavy deposits of snow from all of the antennas before using the equipment.

b. INTERCHANGEABILITY OF RECTIFIER TUBES.—The type JAN-836 rectifier tubes used in this equipment may be replaced by type 3B25 rectifier tubes without changing the circuit or impairing the operation.

15. EXTRA ANTENNA SYSTEM.

a. GENERAL.—An extra Antenna System AS-156 CRN-10, with items as listed in *b* below, is available to permit serving another runway by merely transporting the balance of the equipment to the particular antenna system and runway being served. In all respects its components are exactly equal to corresponding items of Radio Set AN/CRN-10. All handbook descriptions and instructions will therefore apply as for the corresponding items of the regular equipment.

b. EXTRA EQUIPMENT AVAILABLE FOR SERVING ANOTHER RUNWAY.—Following is a list of extra equipment available for serving another runway.

Quantity	Name of Unit	Army Type Designation	Navy Type Designation
1	Case #1 containing:		
	1 Mounting Frame	MT-289/CRN-10	MT-289/CRN-10
	1 Antenna Stowage Rack		
	12 Ground Stake Assembly		
	12 Sandbags		
1	Case #2 containing:		
	1 Antenna Stowage Rack With "A" Frame Parts		
1	Case #3 containing:		
	8 Antenna Assembly (7 for use, 1 spare)	AS-155/CRN-10	AS-155/CRN-10
	1 Mast Mounting Bracket		
	8 Mast (7 for use, 1 spare)		
	1 Curbside Radiator Mounting Bracket		
	1 Roadside Radiator Mounting Bracket		
1	Case #4 containing:		
	1 Antenna Tuning Unit	TN-71/CRN-10	TN-71/CRN-10
	1 Cord (47' 11")	CG-154/CRN-10	CG-154/CRN-10

RESTRICTED
AN 16-30CRN10-3

<i>Quantity</i>	<i>Name of Unit</i>	<i>Army Type Designation</i>	<i>Navy Type Designation</i>
	1 Cord (47' 09")	CG-154/CRN-10	CG-154/CRN-10
	2 Cord (28' 03")	CG-152/CRN-10	CG-152/CRN-10
	2 Cord (19' 09")	CG-152/CRN-10	CG-152/CRN-10
	2 Cord (34' 02")	CG-152/CRN-10	CG-152/CRN-10
	1 Cord (24' 07")	CG-152/CRN-10	CG-152/CRN-10
1	Case #5		
	containing:		
	Radio Frequency	RG-22/U	RG-22/U
	Cable (100' spare bulk)		
	6 Adapter		
	6 Cable Clamp	AN3057-8	AN3057-8
	2 Adapter	AN3055-22-8	AN3055-22-8
	4 Plug	AN3106-16S-5PT	AN3106-16S-5PT
	2 Plug	AN3108-22-8ST	AN3108-22-8ST
	8 Cap and Chain		
	6 Guide Blocks		

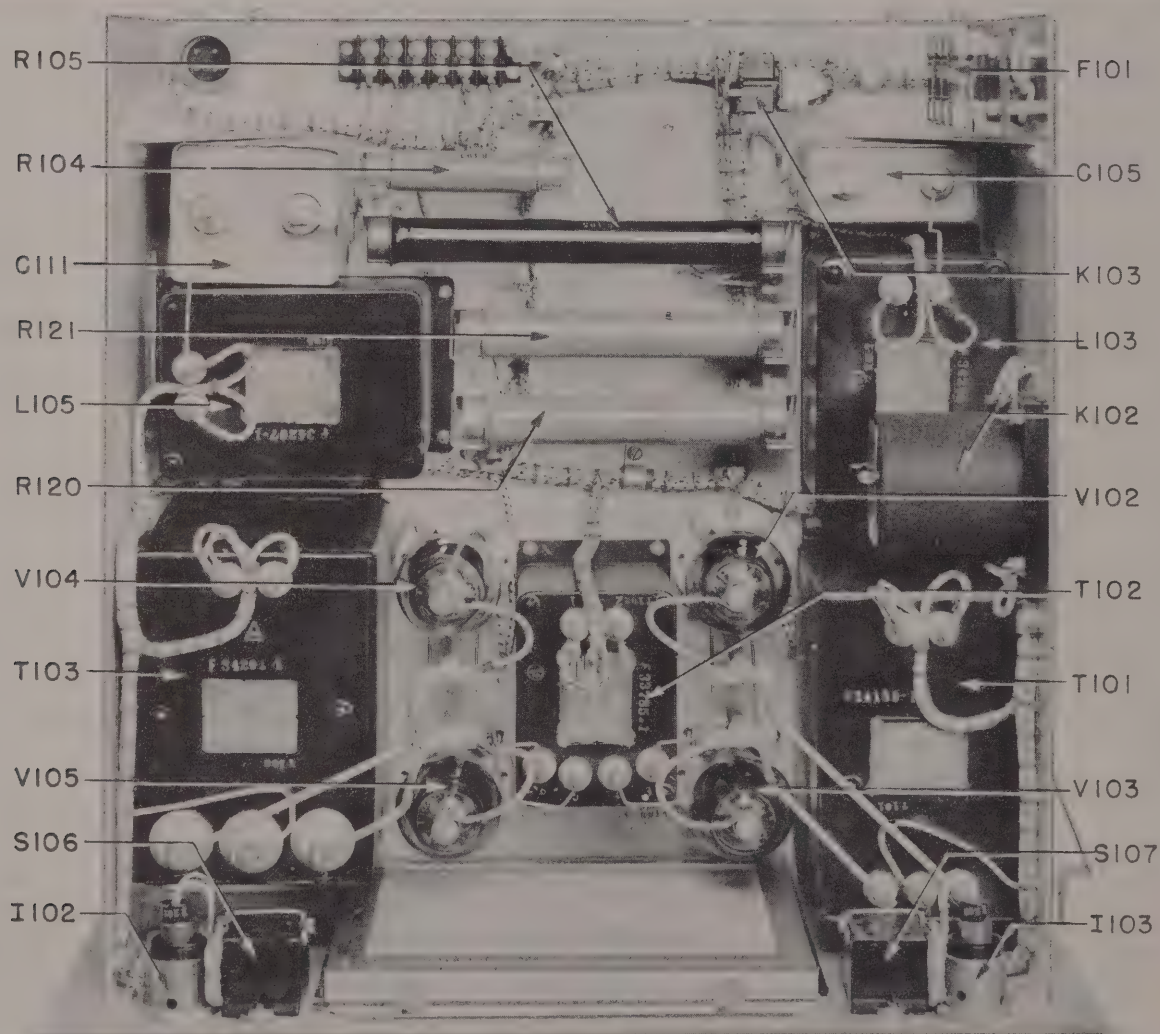


Figure 6-2. Radio Transmitter T-66/CRN-10—Top View of Power Supply Chassis

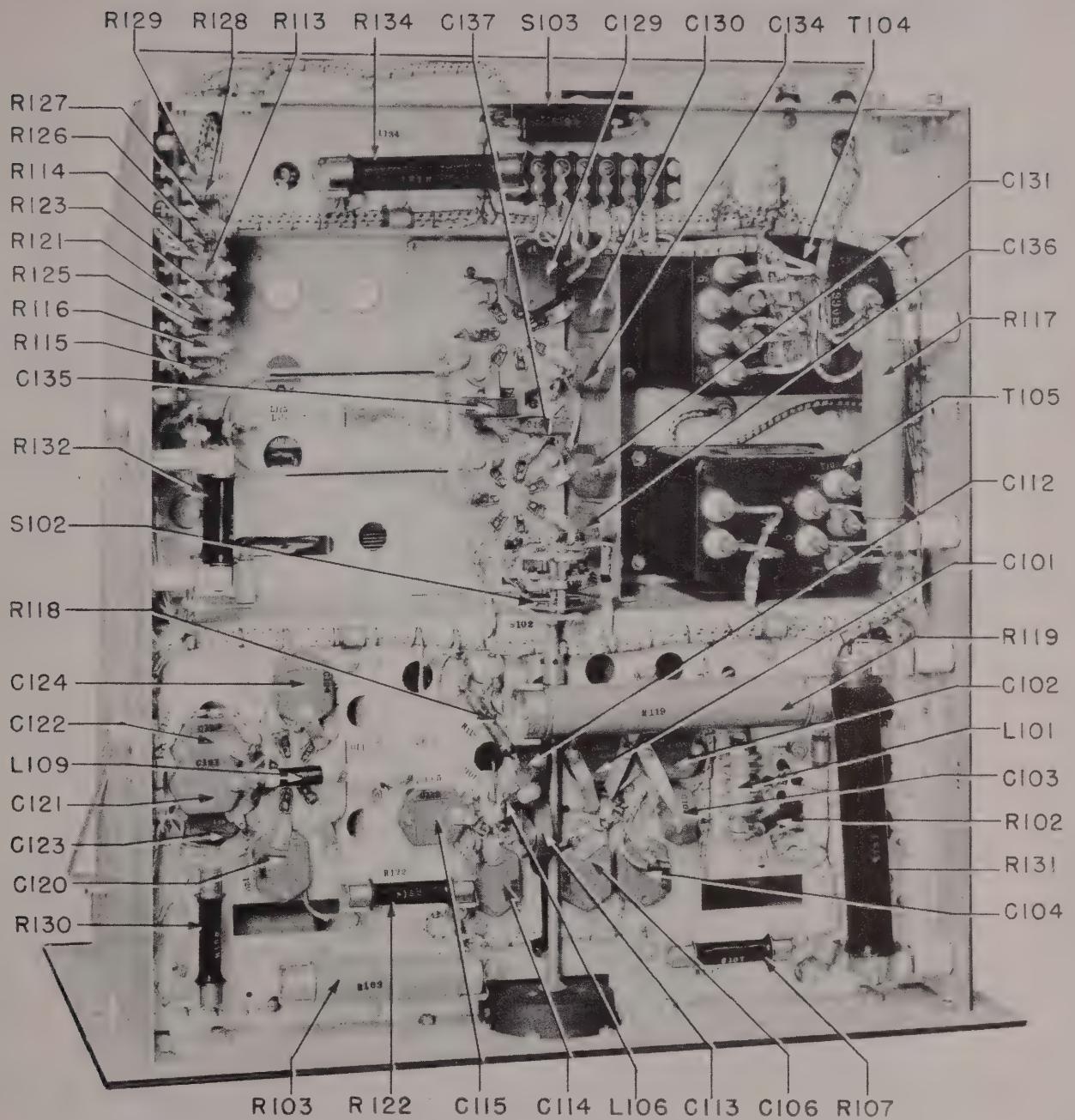


Figure 6-3. Radio Transmitter T-66/CRN-10—Bottom View of R-F Chassis

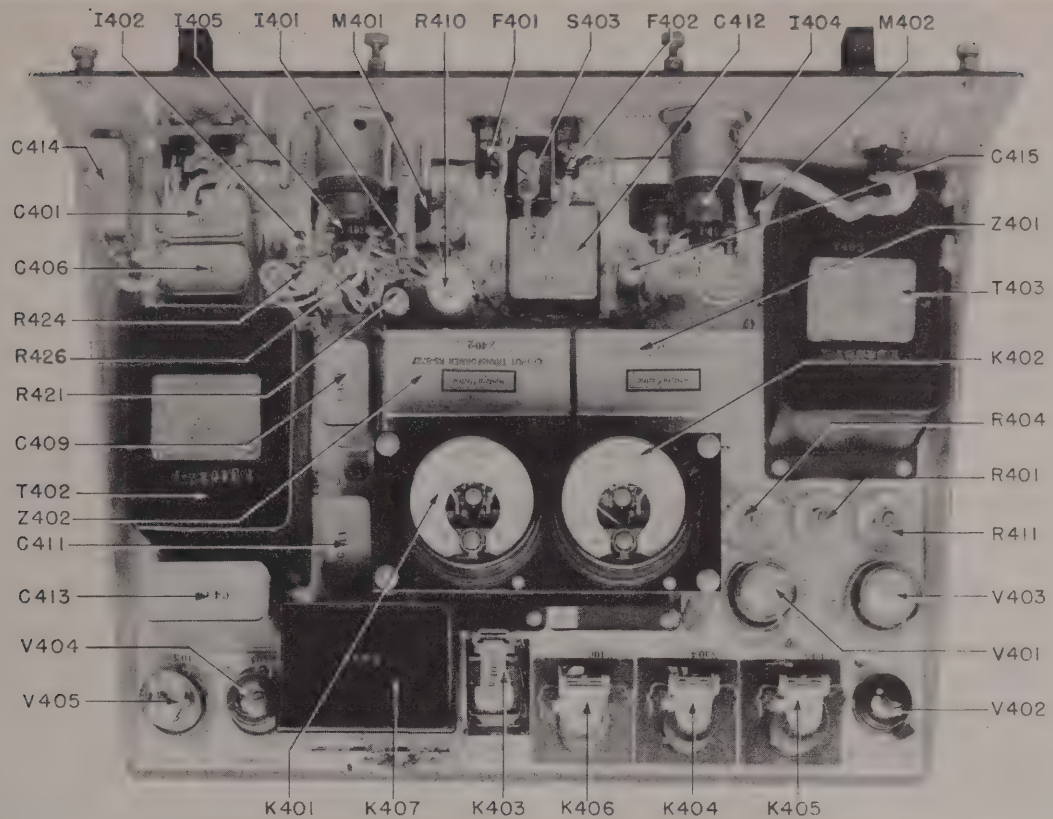


Figure 6-9. Indicator ID-70/CRN-10—Top View of Chassis

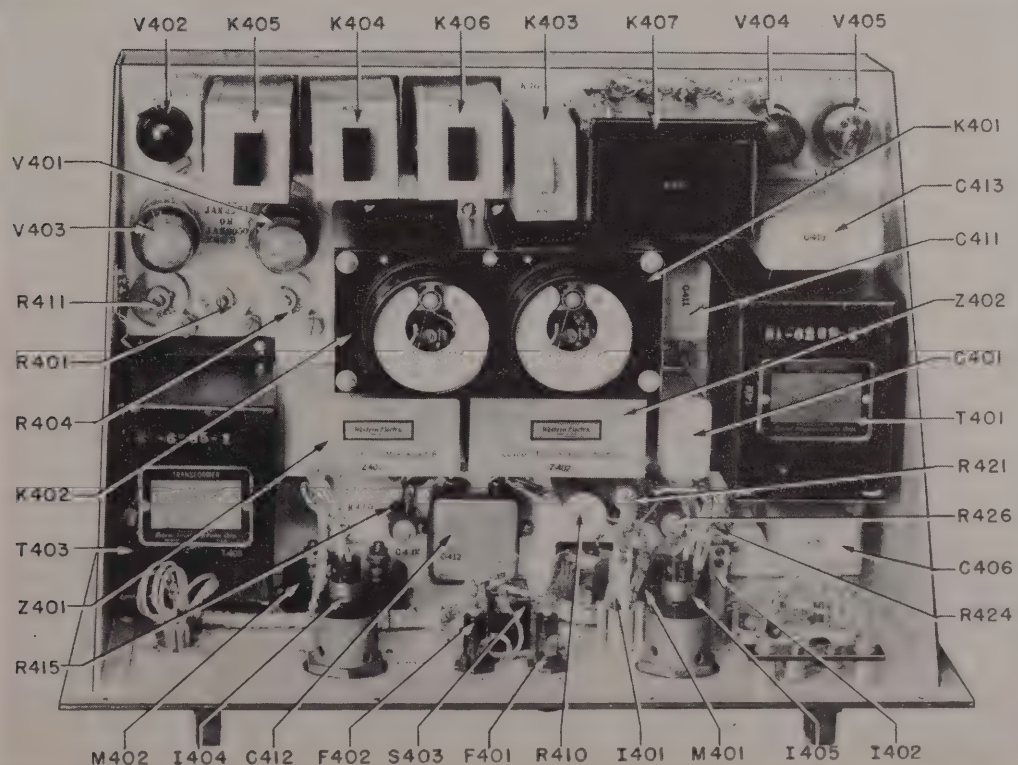


Figure 6-9A. Indicator ID-70A/CRN-10—Top View of Chassis

RESTRICTED
AN 16-30CRN10-3

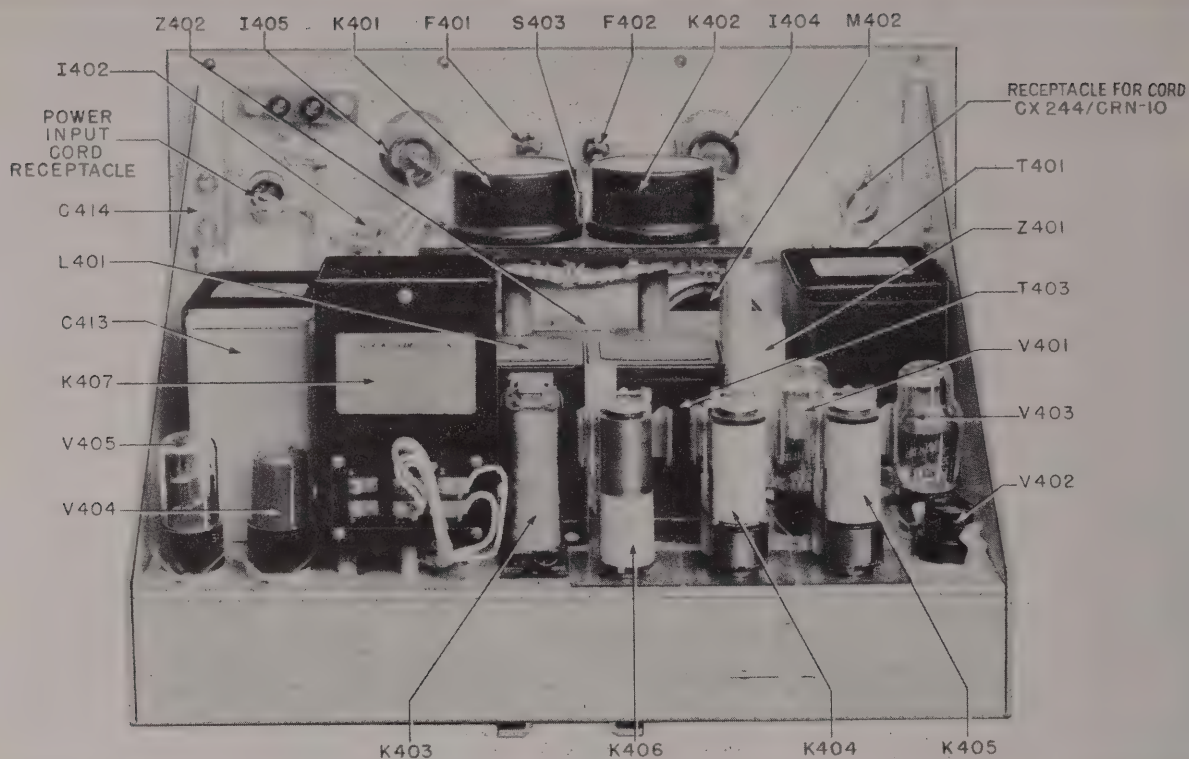


Figure 6-10. Indicator ID-70/CRN-10—Rear View of Chassis

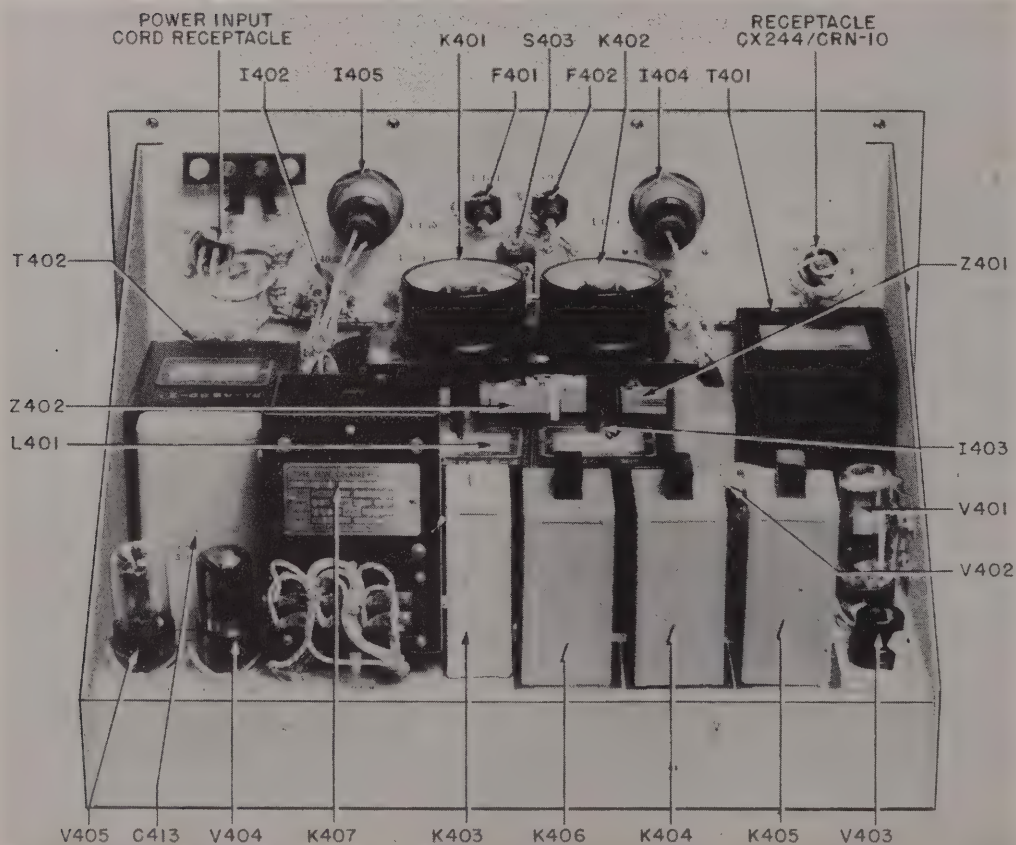


Figure 6-10A. Indicator ID-70A/CRN-10—Rear View of Chassis

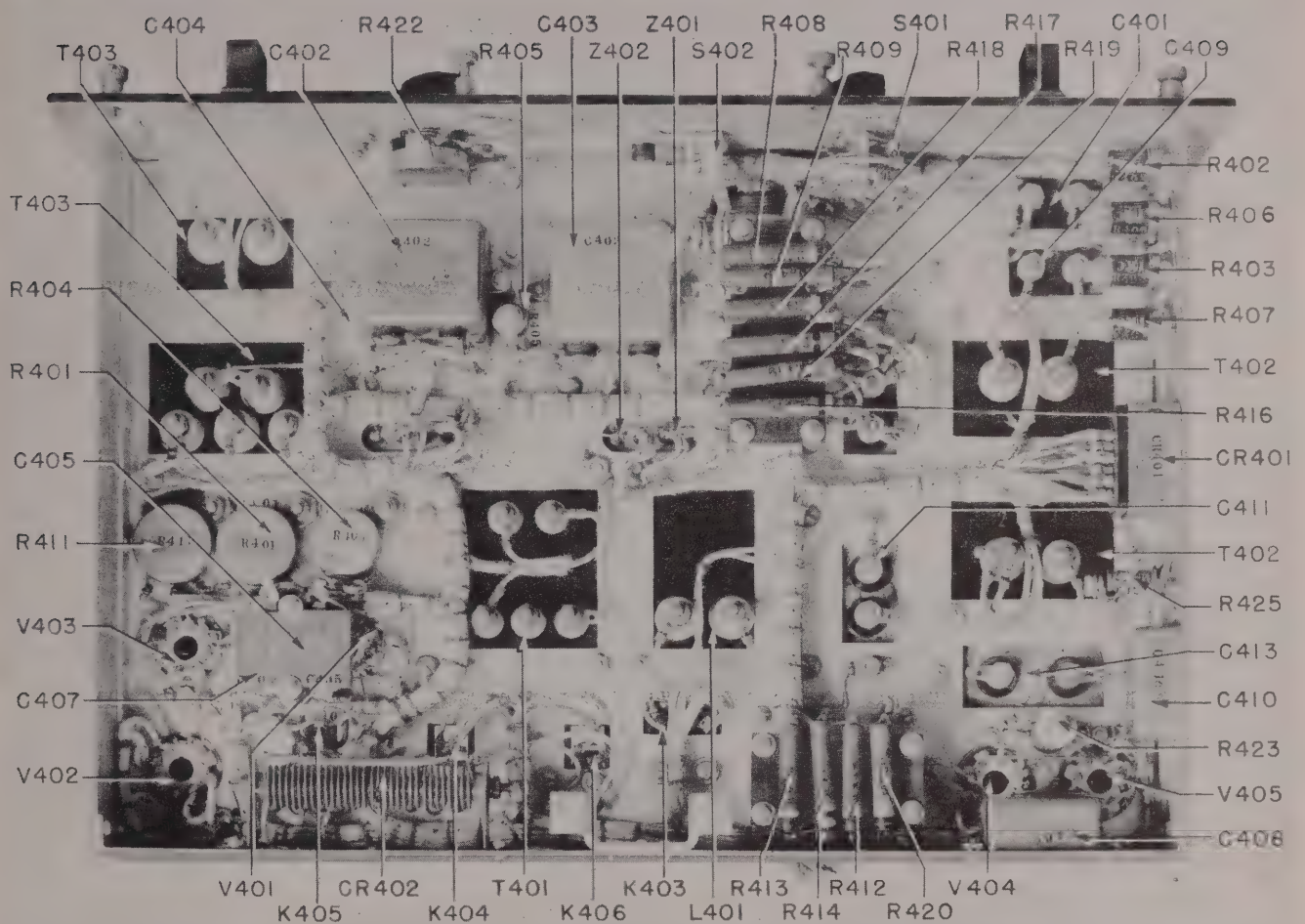


Figure 6-11. Indicator ID-70/CRN-10—Bottom View of Chassis

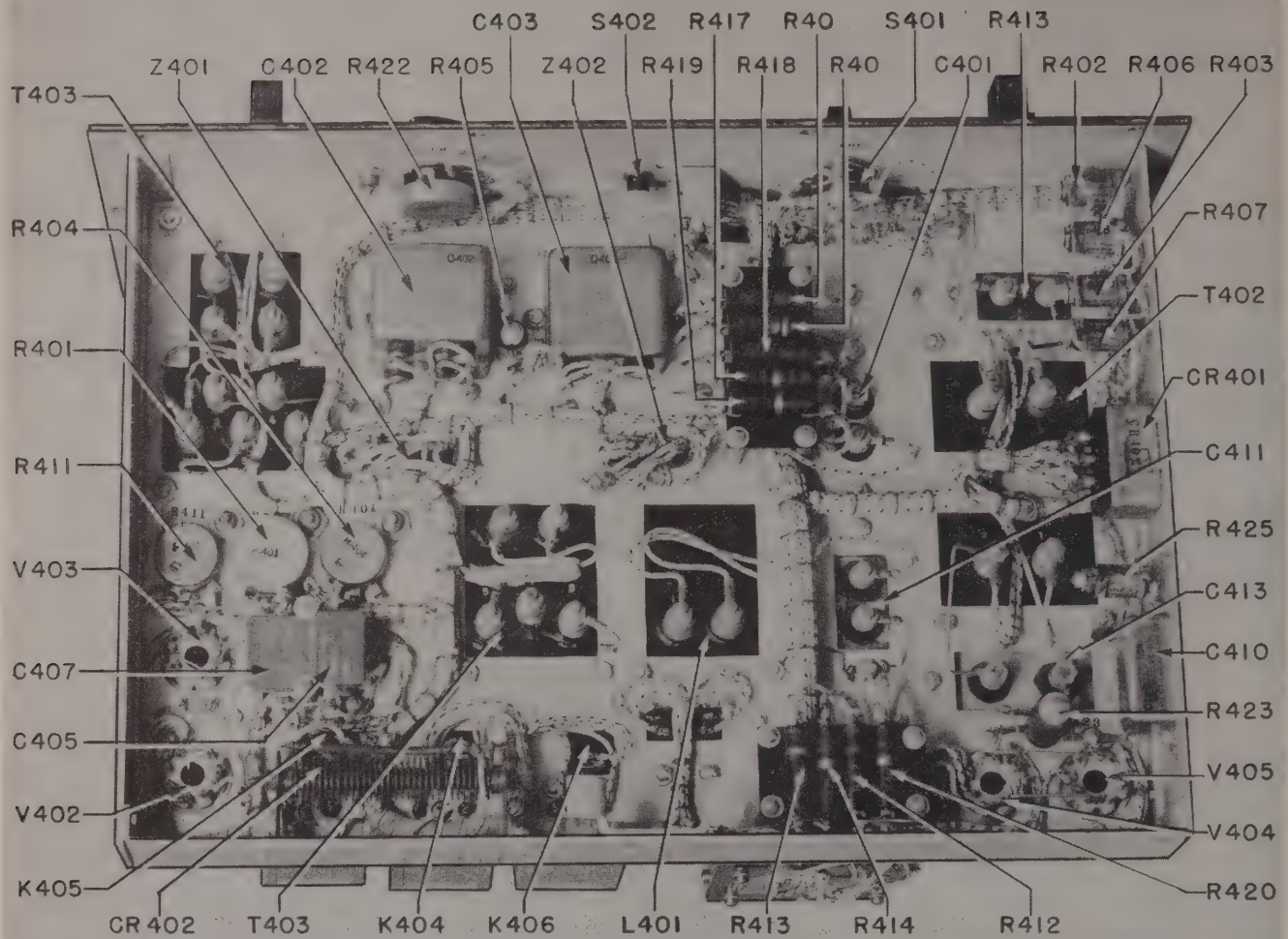


Figure 6-11A. Indicator ID-70A/CRN-10—Bottom View of Chassis

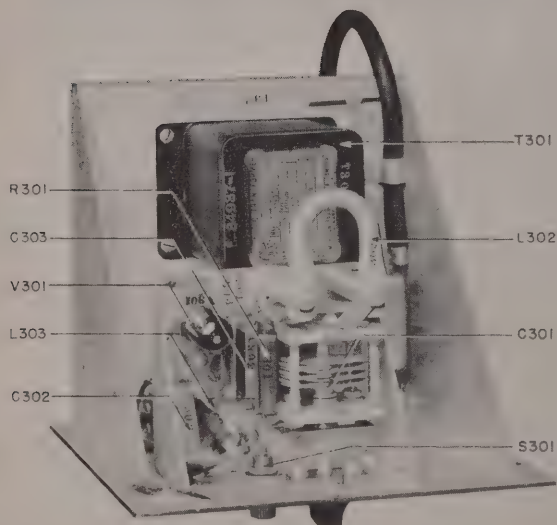


Figure 6-12. Course Monitor TS-180/CRN-10—Top View of Chassis



Figure 6-13. Course Monitor TS-180/CRN-10—Bottom View of Chassis

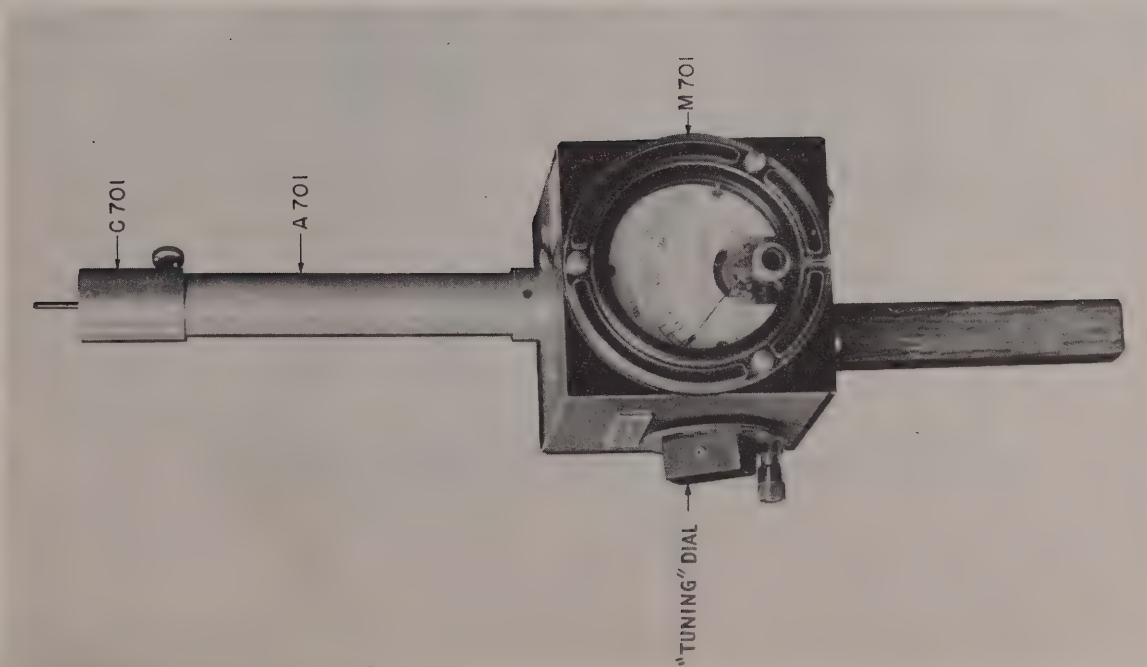


Figure 6-18. Voltmeter IS-176-B—Front View

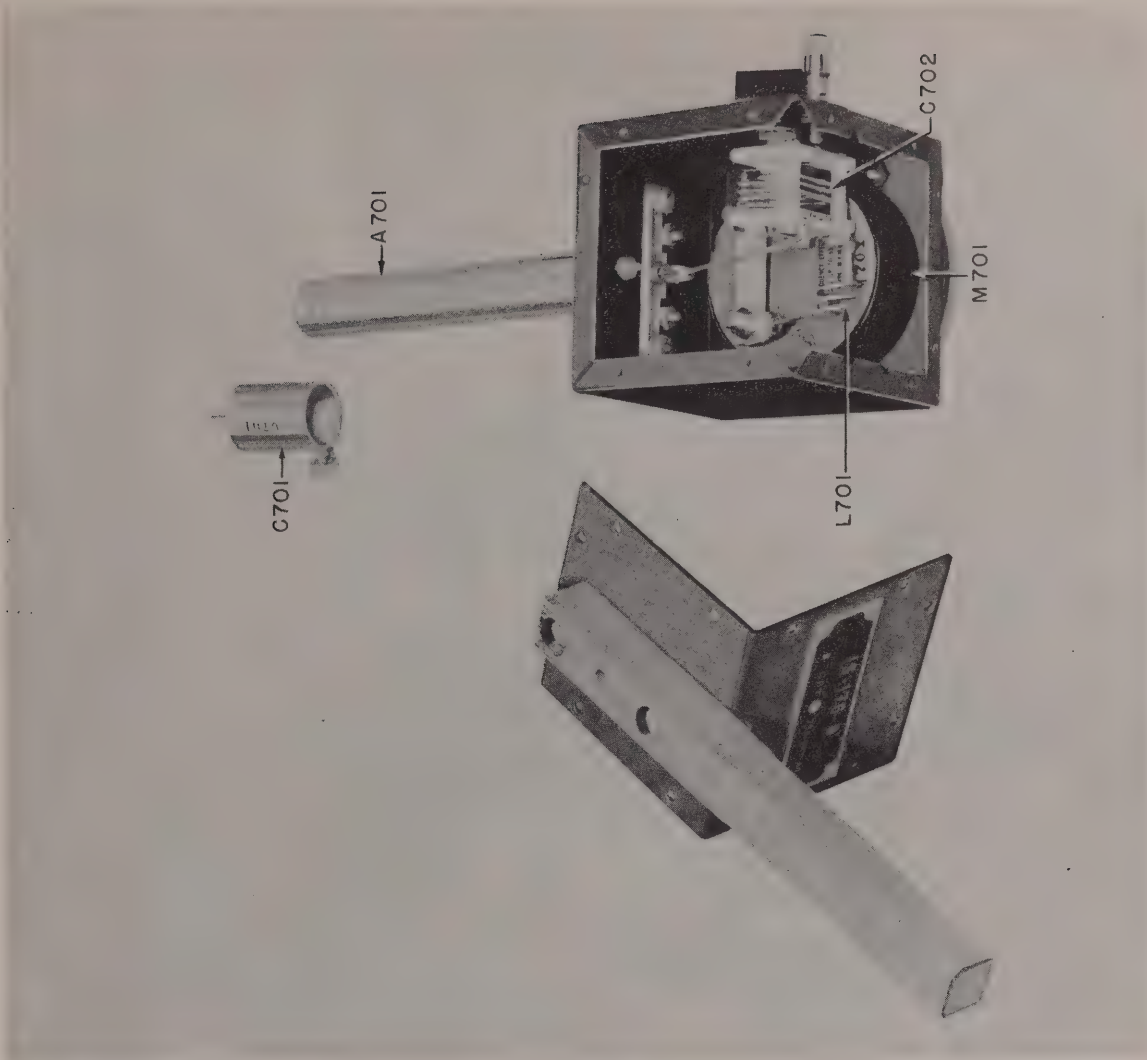


Figure 6-19. Voltmeter IS-176-B—Disassembled

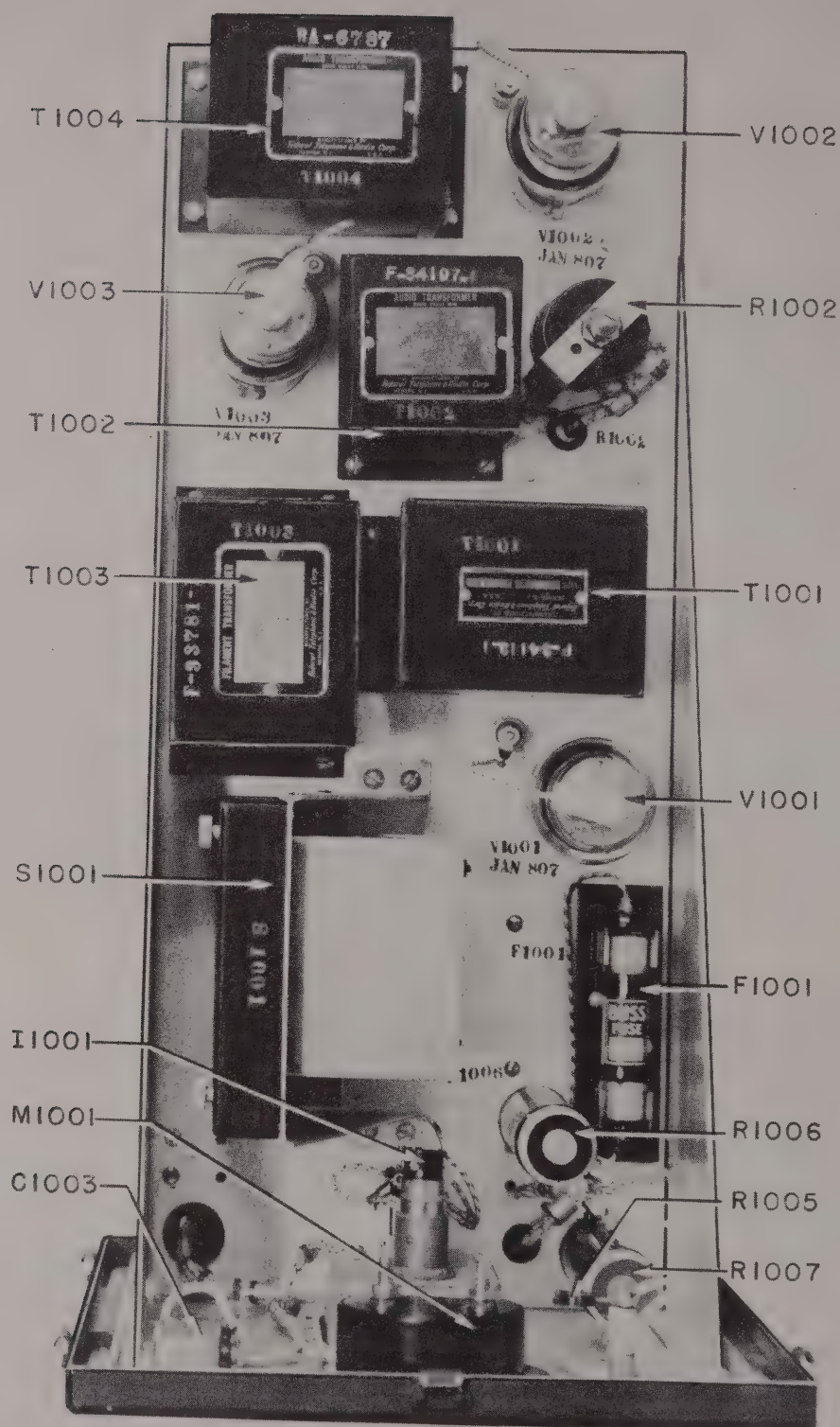


Figure 6-20. Modulator MD-49/CRN-10—Top View of Chassis

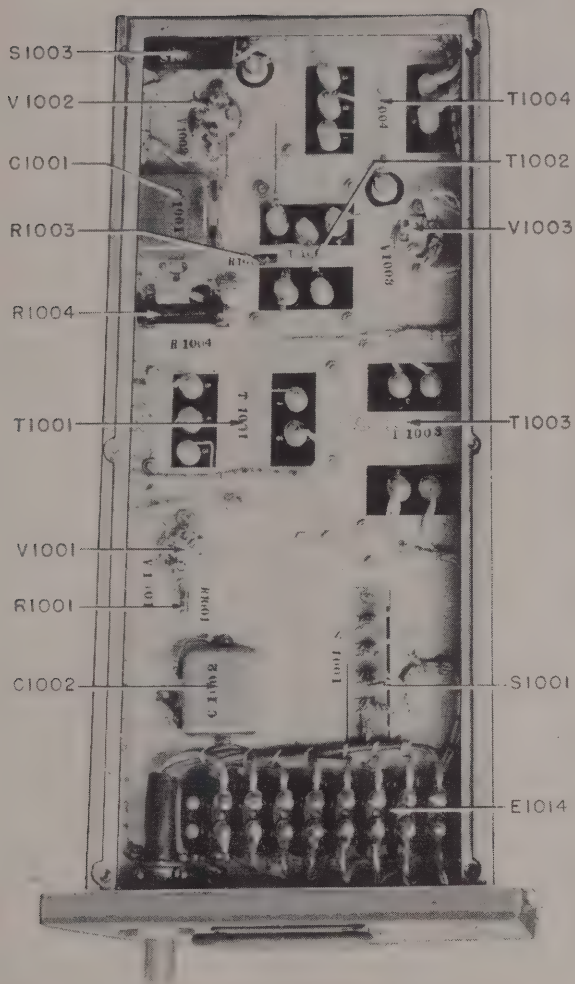


Figure 6-21. Modulator MD-49/CRN-10—
Bottom View of Chassis

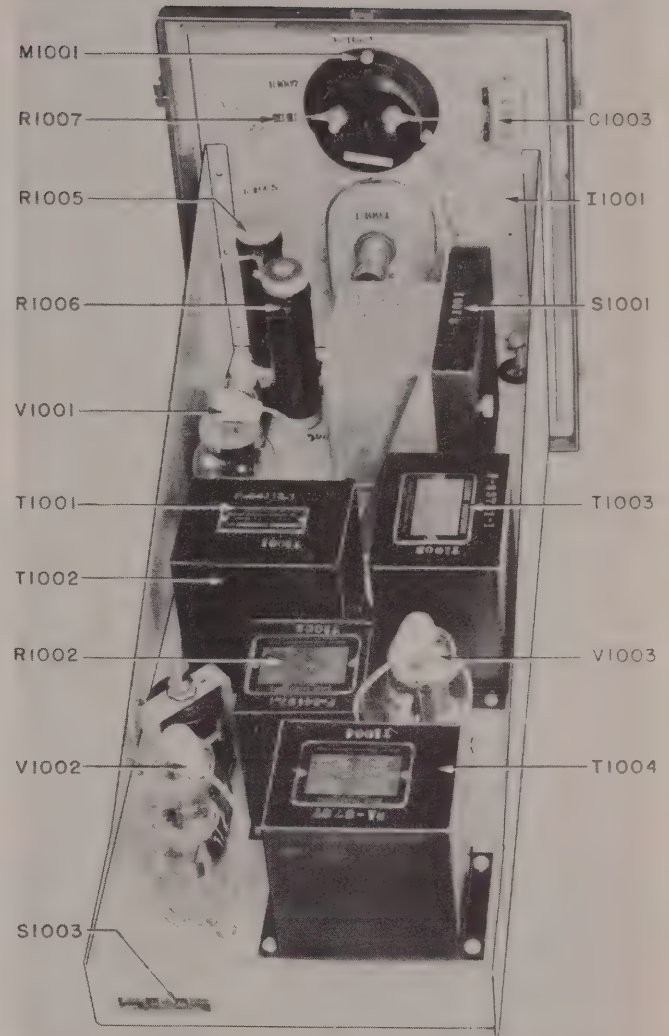


Figure 6-22. Modulator MD-49/CRN-10—
Top Rear View

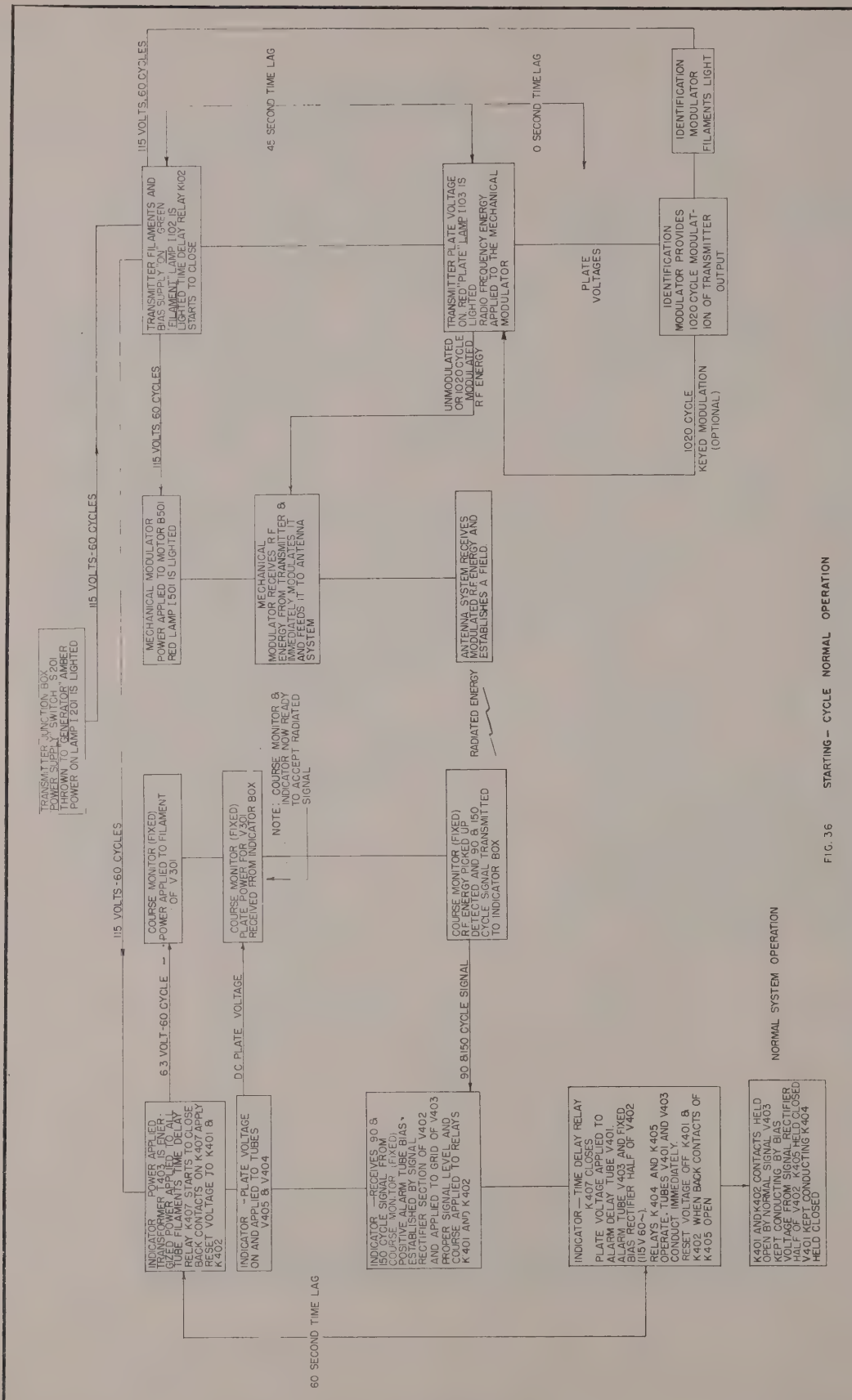


FIG. 36 STARTING - CYCLE NORMAL OPERATION

Figure 6-23. Radio Set AN/CRN-10—Chart Showing Operating Sequence of Power Relays

SECTION VII

TABLE OF REPLACEABLE PARTS

1. CONTENT AND ARRANGEMENT OF TABLE.

a. Listings in the Table of Replaceable Parts do not constitute a complete breakdown of the equipment but consist of all electrical parts and such operative mechanical parts, with the exception of structural and minor parts such as standard bolts, screws, nuts, etc., that are subject to loss or failure.

b. Parts are grouped by major assemblies. Under each major assembly they are listed (1) alphabetically according to type and (2) numerically under each type.

2. ORDERING SPARE PARTS.

a. GENERAL.—Each Service using the Table of Replaceable Parts has established certain depots and service groups for the storage and issue of spare parts. The regulations of each Service should be studied to determine the method of requisitioning spare parts and the sources from which they may be obtained. Information in the table pertaining to manufacturers' or contractors' names, types, models, or drawing numbers is not to be interpreted as authorization to field agencies to attempt to purchase identical or comparable spare parts directly from wholesale or retail stores except under emergency conditions as covered by the existing regulations of the Service concerned.

b. U. S. ARMY PERSONNEL.—The Table of Replaceable Parts is for information *only* and is not to be construed as a list of allowances of maintenance parts or components. Organizations using this equipment will consult applicable AAF Technical Orders of the 00-30 and 00-30A series. Higher maintenance and supply echelons will consult applicable Combat Supply Tables X11A, X11B, and X11I.

3. EXPLANATION OF SYMBBOLS USED.

a. REFERENCE SYMBOLS (COLUMN ONE).—To identify parts of an equipment referred to in the text, in illustrations, and in the Table of Replaceable Parts, a reference symbol is assigned to each part making up a major assembly of an equipment. Each symbol consists of an alphabetical portion and a numerical portion, separated by a hyphen. (Example C-101.) The alphabetical portion denotes the type of part, classified in accordance with the following list:

<i>Alphabetical Portion of Reference Symbol</i>	<i>Type of Part</i>
A.....	Structural parts, panels, frames, castings, etc.
B.....	Motors and prime movers
C.....	Capacitors of all types
D.....	Dynamotors
E.....	Miscellaneous electrical parts, insulators, knobs brushes, etc.

<i>Alphabetical Portion of Reference Symbol</i>	<i>Type of Part</i>
F.....	Fuses
G.....	Generators, exciters, etc.
H.....	Hardware, screws, bolts, studs, pins, snap-slides, tools, etc.
I.....	Indicating devices (except meters and thermometers), pilot lamps, etc.
J.....	Jacks and receptacles (stationary)
K.....	Contactors, relays, circuit breakers, etc.
L.....	Inductors, radio-frequency, and audio-frequency
M.....	Meters of all types, gauges, thermometers, etc.
N.....	Nameplates, dials, charts, etc.
O.....	Mechanical parts, bearings, shafts, couplings, gears, ferrules, flexible shafts, housings, etc.
P.....	Plugs
Q.....	Diaphragms (microphone, telephone, projector, etc.)
R.....	Resistors, fixed and variable (potentiometers, etc.)
S.....	Switches, interlocks, thermostats
T.....	Transformers, radio-frequency, audio-frequency and power
U.....	Hydraulic parts
V.....	Vacuum and gaseous discharge tubes
W.....	Wires, interconnecting cables, without plugs
X.....	Sockets
Y.....	Mechanical oscillators, crystals, magnetostriction tubes, etc.
Z.....	Impedances, such as traps (wave) etc.
BT.....	Batteries
CR.....	Rectifiers (electrochemical, copper-oxide, selenium crystal, etc., except vacuum or gaseous tubes)
HR.....	Heaters
HS.....	Handset (telephone and microphone combination)
HT.....	Head telephones
HX.....	Heat Exchangers
LS.....	Loud speakers
MG.....	Motor generators (single unit)
MI.....	Microphones (hand or chest type)
TY.....	Surge eliminators (special discharge resistors)
VR.....	Voltage regulators (except vacuum or gaseous tubes)

The numerical portion of the reference symbol is assigned as follows: Each part in each of the classifications of parts within a major assembly is assigned a number running consecutively for 99 numbers—from 101 to 199 for the first major assembly listed in the table, from 201 to 299 for the second major assembly, etc. If parts in one or more classifications of parts within a major assembly exceed 99, however, the next hundred series, e.g. 301 to 399, is assigned to that major assembly even though only part of the numbers in that series are used. The next major assembly listed then begins with the next series, e.g. 401 to 499. The block of numbers assigned to each major assembly is shown in paragraph 5, this section.

Only one reference symbol is assigned to a part, but suffix letters are sometimes added to distinguish between multiple electrical or mechanical characteristics of a part. Example: C-101A, C-101B, and C-101C identify

each part of a triple capacitor C-101; K-101A identifies the coil and K-101B the contacts of a relay K-101.

b. CROSS-HATCH SYMBOL (COLUMN TWO).—

Cross-hatch symbols (#) appearing in column two indicate that corresponding parts are not included in any concurrently procured spare parts group.

4. ABBREVIATIONS.—Abbreviations used in the table of replaceable parts are as follows:

<i>Abbreviation</i>	<i>Definition</i>	<i>Abbreviation</i>	<i>Definition</i>
AC	alternating current	min	minimum
AF	audio frequency	mf	microfarad (s)
AM	amplitude modulation	mmf	micromicrofarad (s)
amp	amperes	u sec	microsecond (s)
approx	approximately	mh	millihenry
AWG	American Wire Gauge	mtd	mounted
AVC	Automatic volume control	mtg	mounting
AWS	American War Standard	mts	mounts
C	Centigrade	OD	outer diameter
Coef	coefficient	%	percent
cps	cycles per second	±	plus or minus
CW	continuous wave	PD	pitch diameter
db	decibel (s)	pri	primary
DC	direct current	RF	radio frequency
dia	diameter	RMA	Radio Manufacturers' Association
dimen	dimension (s)	rpm	revolutions per minute
DPDT	double pole double throw	sec	secondary
DPST	double pole single throw	SPDT	single pole double throw
F	Fahrenheit	SPST	single pole single throw
ft	foot, feet	thd	thread (s)
FM	frequency modulation	thk	thick
hy	henry (s)	uh	microhenry
"	inch (es)	UHF	ultra-high-frequency
ID	inner diameter	v	volt (s)
IF	intermediate frequency	vdcw	DC working volts
JAN	joint Army Navy	VF	video frequency
kc	kilocycle (s)	VHF	very-high frequency
lg	long	w	watt (s)
ma	milliampere (s)	wd	wide
max	maximum	ww	wire wound
mc	megacycle (s)		
meg	megohm		

5. INDEX OF MAJOR ASSEMBLIES.

<i>Major Assembly</i>	<i>Numerical Series of Reference Symbols</i>	<i>Page</i>
Radio Transmitter T-66/CRN-10	101 to 199	7-9
Junction Box	201 to 299	7-29
Course Monitor TS-180/CRN-10	301 to 399	7-33
Indicator ID-70/CRN-10 or ID-70A/CRN-10	401 to 499	7-37
Modulator and Bridge MD-24/CRN-10	501 to 599	7-50
Course Detector TS-179/CRN-10	601 to 699	7-56
Voltmeter IS-176-B	701 to 799	7-67
Antenna System AS-156/CRN-10	801 to 899	7-69
Trailer V-6/CRN-10	901 to 999	7-75
Modulator MD-49/CRN-10	1001 to 1099	7-77

**6. DECIMAL EQUIVALENTS OF WIRE SIZES OF AWG
AND SWG (BRITISH).**

<i>Size (AWG)</i>	<i>Diameter (inches)</i>	<i>Size (SWG)</i>	<i>Diameter (inches)</i>
0000	.46000	0000	.4000
000	.40964	000	.3720
00	.36480	00	.3480
0	.32486	0	.3240
1	.28930	1	.3000
2	.25763	2	.2760
3	.22942	3	.2520
4	.20431	4	.2320
5	.18194	5	.2120
6	.16202	6	.1980
7	.14428	7	.1760
8	.12849	8	.1600
9	.11442	9	.1440
10	.10190	10	.1280
11	.09074	11	.1160
12	.08081	12	.1040
13	.07196	13	.0920
14	.06408	14	.0800
15	.05707	15	.0720
16	.05082	16	.0640
17	.04526	17	.0560
18	.04030	18	.0480
19	.03589	19	.0400
20	.03196	20	.0360
21	.02846	21	.0320
22	.02535	22	.0280
23	.02257	23	.0240
24	.02010	24	.0220
25	.01790	25	.0200
26	.01594	26	.0180
27	.01420	27	.0164
28	.01264	28	.0148
29	.01126	29	.0136
30	.01003	30	.0124
31	.008928	31	.0116
32	.007950	32	.0108
33	.007080	33	.0100
34	.006305	34	.0092
35	.005615	35	.0084
36	.005000	36	.0076
37	.004453	37	.0068
38	.003965	38	.0060
39	.003531	39	.0052
40	.003145	40	.0048

**7. DIRECTORY OF NAMES AND ADDRESSES OF
SUPPLIERS LISTED ACCORDING TO CODE
SYMBOLS.**

The manufacturer's code symbols listed below are referred to in the "Manufacturer and Designation" column of this parts catalog.

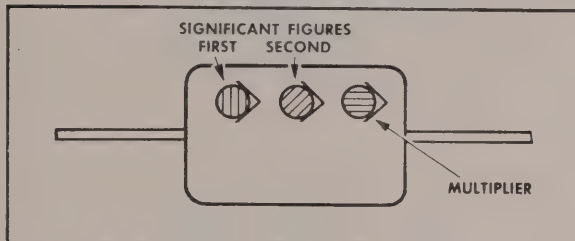
Reference should be made to the following table when the full name and address of the manufacturer is required.

<i>Abbreviation</i>	<i>Manufacturer's Name and Address</i>
AB	Allen-Bradley, Milwaukee, Wisconsin.
AER	Aerovox Corp., New Bedford, Mass.
AZ	Air Maze Corp., 5200 Harvard Ave., Cleveland 5, Ohio.
AL	American Lava Corp., Chattanooga, Tennessee.
H&H	Arrow-Hart & Hegeman Electric Co., 103 Hawthorne St., Hartford, Connecticut.
AT	American Transformer Co., 178 Emmet St., Newark, N. J.
APH	American Phenolic Corp., 1930 South 54th Ave., Chicago, Ill.
AIR	Atlantic India Rubber Works, 1453 W. Van Buren St., Chicago, Ill.
A	Automatic Electric Sales Co., 1031 W. Van Buren St., Chicago, Ill.
BA	Ahlers, Bruno H., 8524-89 St., Woodhaven, L. I., N. Y.
BI	Birnbach Radio, 145 Hudson St., New York, N. Y.
BR	Bryant Electric Co., Barnum Station, Bridgeport, Conn.
BU	Bud Radio, 5205 Cedar Ave., Cleveland, Ohio.
BUSS	Bussman Mfg. Co., 2538 W. University St., St. Louis, Missouri.
C	Cardwell Mfg. Corp., Allen D., 81 Prospect St., Brooklyn, N. Y.
CD	Cornell-Dubilier Electric Corp. 1000 Hamilton Blvd., So. Plainfield, N. J.
CPC	C. P. Clare & Co., 6729 Sunnyside Ave., Chicago, Ill.
CI	Centralab, Inc., 900 E. Keefe Ave., Milwaukee, Wis.
CMC	Cinch Mfg. Co., 2535 W. Van Buren St., Chicago, Ill.
CLM	Clarostat Mfg. Co., Inc., 130 Clinton St., Brooklyn, N. Y.
CC	Coto-Coil, Providence, Rhode Island
CMR	Cramer Co., Inc., The R. W., Centerbrook, Conn.
C-H	Cutler-Hammer, Inc., 1333 West St., St. Paul Ave.; Milwaukee, Wis.
DL	Dial Light Co., of America, 90 West St., New York, N. Y.
E	Erie Resistor Co., Erie, Pa.
E	Federal Telephone and Radio Corp., 200 Mt. Pleasant Ave., Newark, N. J.
GE	General Electric Co., 1 River Road, Schenectady, N. Y.
G	Graybar Electric Co., 420 Lexington Ave., New York City.
H	Hammarlund Mfg. Co., Inc., 460 W. 34th St., New York, N. Y.
HK	Heintz & Kaufman, Ltd., South San Francisco, Calif.

<i>Abbreviation</i>	<i>Manufacturer's Name and Address</i>	<i>Abbreviation</i>	<i>Manufacturer's Name and Address</i>
HUBB	Hubbell, Inc., Harvey, 1930 Thomas St., Bridgeport, Conn.	MU	Mutar Co., 1255 So. Michigan Ave., Chicago, Ill.
ILG	ILG Blower Co., Chicago, Ill.	N	National Company, Inc., 61 Sherman Street, Malden, Mass.
IM	Injection Moulding Corp., 113-4th Ave., New York, N. Y.	OAK	Oak Mfg. Co., 711 W. Lake St., Chicago, Ill.
INS	Instrument Resistors Co., Little Falls, N. J.	OM	Ohmite Mfg. Co., 4835 Flournoy Street, Chicago, Ill.
ICC	Industrial Condenser Corp., 27 Park Place, New York, N. Y.	PS	Pass & Seymour, Inc., 100 Boyd Ave., Salvoy, N. Y.
IRC	International Resistance Co., 401 No. Broad St., Philadelphia, Pa.	PHIL	Philson Mfg. Co., 156 Chambers St., New York, N. Y.
ISO	Isolantite, Inc., 343 Cortlandt St., Belleville, N. J.	RCA	Radio Corporation of America, 415 So. 5th Street, Harrison, New Jersey.
J	Johnson Co., E. F., Waseca, Minn.	RM	Robbins & Meyers, Inc., 1934 Clark Blvd., Springfield, Ohio.
JO	Jones Co., Howard B., 2300 Wabansia Ave., Chicago, Ill.	SA	Sangamo Electric Co., Springfield, Illinois.
KL	Kirkland Co., H. R., Morristown, N. J.	SK	Sickles Co., F. W., 300 Main St., Springfield, Mass.
KK	Kurz-Kasch, Inc., 1417 So. Broadway, Dayton, Ohio.	SL	Signal Indicator Co., 140 Cedar St., New York, N. Y.
L	Lord Mfg. Co., 1639 W. 12th Street, Erie, Pa.	S	Spencer Thermostat Co., 40 Forest St., Attelboro, Mass.
LI	Littelfuse Laboratories, 4757 Ravenswood Ave., Chicago, Ill.	SS	Sprague Specialties Co., North Adams, Mass.
MJ	Millen Mfg. Co., Inc., James, Malden, Mass.	SID	Square D Company, 6060 Rivard St., Detroit, Michigan.
MAL	Mallory & Co., P. R., 6 East 45th Street, New York, N. Y.		
MET	Metal Etching Corp., 83rd St. & Atlanta Ave., Ozone Park, N. Y.		

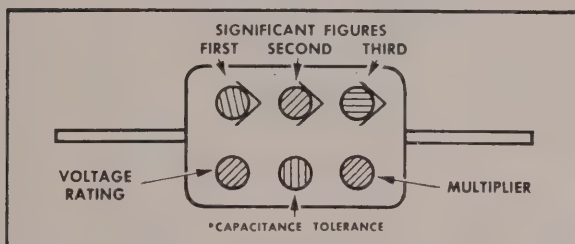
CAPACITOR COLOR CODES

RMA 3-DOT COLOR CODE FOR MICA-DIELECTRIC CAPACITORS

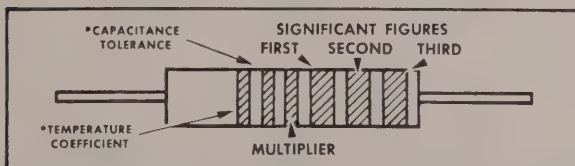


Capacitors marked with this code have a voltage rating of 500 volts.

RMA 6-DOT COLOR CODE FOR MICA-DIELECTRIC CAPACITORS



RMA COLOR CODE FOR TUBULAR CERAMIC-DIELECTRIC CAPACITORS



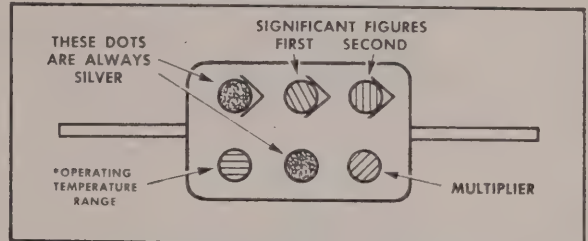
Capacitors marked with this code have a voltage rating of 500 volts.

RMA Radio Manufacturers Association JAN Joint Army-Navy

Note These color codes give all capacitances in micromicrofarads.

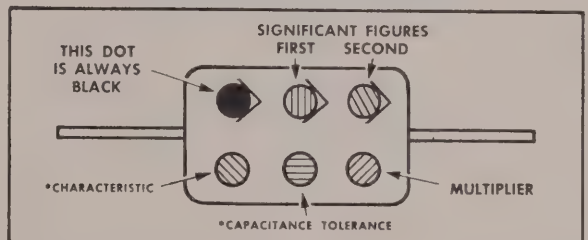
*Items marked with an asterisk are of interest primarily to depot and higher echelon repair personnel

JAN 6-DOT COLOR CODE FOR PAPER-DIELECTRIC CAPACITORS



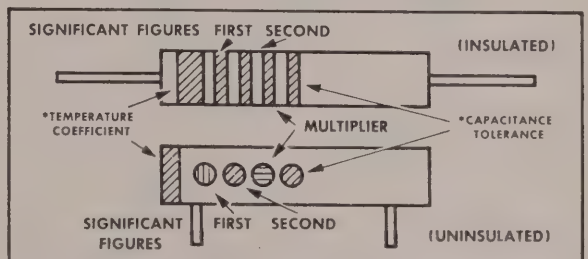
The silver dots serve to identify this marking. For working voltages see JAN type designation code.

JAN 6-DOT COLOR CODE FOR MICA-DIELECTRIC CAPACITORS



The black dot serves to identify this code. For working voltages see JAN type designation code.

JAN COLOR CODE FOR FIXED CERAMIC-DIELECTRIC CAPACITORS

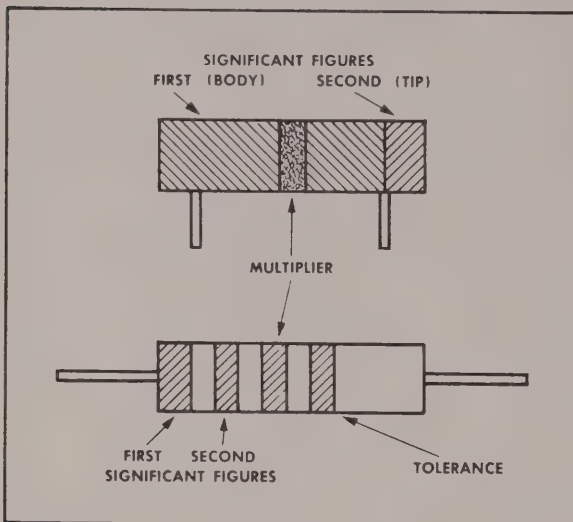


Capacitors marked with this code have a voltage rating of 500 volts. Either the band or dot code may be used.

COLOR	SIGNIFICANT FIGURE	MULTIPLIER			RMA VOLTAGE RATING
		RMA MICA-AND CERAMIC-DIELECTRIC	JAN MICA-AND PAPER-DIELECTRIC	JAN CERAMIC-DIELECTRIC	
BLACK	0	1	1	1	
BROWN	1	10	10	10	100
RED	2	100	100	100	200
ORANGE	3	1,000	1,000	1,000	300
YELLOW	4	10,000			400
GREEN	5	100,000			500
BLUE	6	1,000,000			600
VIOLET	7	10,000,000			700
GRAY	8	100,000,000		0.01	800
WHITE	9	1,000,000,000		0.1	900
GOLD		0.1	0.1		1,000
SILVER		0.01	0.01		2,000
NO COLOR					500

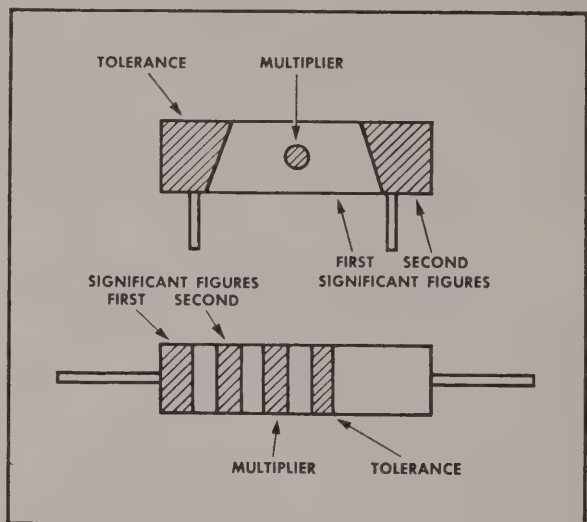
RESISTOR COLOR CODES

RMA COLOR CODE FOR
FIXED COMPOSITION RESISTORS



Insulated fixed composition resistors with axial leads are designated by a natural tan background color. Non-insulated fixed composition resistors with axial leads are designated by a black background color.

JAN COLOR CODE FOR
FIXED COMPOSITION RESISTORS



Resistors with axial leads are insulated. Resistors with radial leads are uninsulated.

COLOR	SIGNIFICANT FIGURE	MULTIPLIER	TOLERANCE (PERCENT)
BLACK	0	1	
BROWN	1	10	
RED	2	100	
ORANGE	3	1,000	
YELLOW	4	10,000	
GREEN	5	100,000	
BLUE	6	1,000,000	
VIOLET	7	10,000,000*	
GRAY	8	100,000,000*	
WHITE	9	1,000,000,000*	
GOLD		0.1*	5
SILVER		0.01*	10
NO COLOR			20

*JAN ONLY

Example: A 50,000-ohm resistor with a standard tolerance of 20 percent (no color) would be indicated by a green ring (5), a black ring (0), and an orange ring (000)

RMA: Radio Manufacturers Association
JAN: Joint Army-Navy

JOINT ARMY-NAVY TYPE DESIGNATION CODES FOR ELECTRICAL COMPONENTS

INTRODUCTION: Fixed and variable resistors and fixed capacitors manufactured under JAN specifications may be labeled with a *type designation code* instead of a color code or actual electrical value. For resistors and capacitors marked with the JAN type designation code, electrical values and other data can be determined by consulting the following information.

RESISTORS

FIXED, COMPOSITION

RC 10 AE 153 M
COMPONENT STYLE *CHARACTERISTIC RESISTANCE *TOLERANCE

COMPONENT: RC signifies *fixed, composition resistor*.

STYLE: A two-digit symbol indicates power rating and physical size.

Resistor style	Wattage
RC10, RC15, RC16	¼ WATT
RC20, RC21, RC25	½ WATT
RC30, RC31, RC35, RC38	1 WATT
RC40, RC41, RC45	2 WATTS
RC65	4 WATTS
RC75, RC76	5 WATTS

RESISTANCE: A three-digit symbol indicates the resistance value in ohms. The first two digits give the first two figures of the resistance value; the third digit gives the number of zeros which follow the first two figures.

RESISTORS

VARIABLE, WIRE-WOUND

RA 15 A 1 RH 103 A K
COMPONENT STYLE SWITCH *TORQUE *SHAFT *TAPER *TOLERANCE

COMPONENT: RA signifies *variable, wire-wound resistor*.

STYLE: A two-digit symbol indicates power rating and physical size and shape.

SWITCH: Symbol A indicates no switch. Symbol B indicates a switch turned ON at start of clockwise rotation.

RESISTANCE: A three-digit symbol indicates the resistance value in ohms. The first two digits give the first two figures of the resistance value; the final digit gives the number of zeros which follow the first two figures. The letter R may be substituted to represent a decimal point; but when R is used, the last digit of the group becomes significant.

RHEOSTATS

WIRE-WOUND, POWER-TYPE

RP 35 2 FD 252 KK
COMPONENT STYLE OFF POSITION RESISTANCE *SHAFT *TOLERANCE

COMPONENT: RP signifies all *rheostats*.

STYLE: Same as for variable, wire-wound resistors.

OFF POSITION:

Numeral	OFF position
1	None.
2	At end of counterclockwise rotation.
3	At end of clockwise rotation.

RESISTANCE: Same as for variable, wire-wound resistors.

*Items starred are of interest primarily to depot and higher echelon repair personnel.

CAPACITORS

FIXED MICA-DIELECTRIC

CM **20** **B** **511** **K**

COMPONENT CASE CAPACITANCE

*CHARACTERISTIC *TOLERANCE

COMPONENT: CM signifies *fixed, mica-dielectric capacitor*.

CASE: A two-digit symbol identifies a physical case size and shape.

CAPACITANCE: A three-digit symbol indicates the capacitance value in micromicrofarads. The first two digits give the first two figures of the capacitance value; the final digit gives the number of zeros which follow the first two figures. When more than two significant figures are required, additional digits may be used, the last digit always indicating the number of zeros.

D-C WORKING VOLTAGE FOR CAPACITANCE RANGE

Case	Capacitance range	Vdew
CM20	5-510 mmf	500
CM25	5-1,000 mmf	500
CM30	470-3,300 mmf	500
CM35	470-6,200 mmf	500
	6,800-10,000 mmf	500
CM40	3,300-8,200 mmf	500
	9,100-10,000 mmf	300

NOTE: Working voltages for capacitors above CM40 are stamped on the case.

The d-c working voltage of a capacitor can be determined from the above table when the case size and value of capacitance are known.

CAPACITORS

FIXED, MOLDED, PAPER-DIELECTRIC†

CN **36** **A** **302**
 COMPONENT CASE | CAPACITANCE
 *CHARACTERISTIC

COMPONENT: CN signifies *fixed, molded, paper-dielectric capacitor*.

CASE: Same as for fixed, mica-dielectric capacitors.

CAPACITANCE: A three-digit symbol indicates the capacitance value in micromicrofarads. The first two digits give the first two figures of the capacitance value; the third digit gives the number of zeros which follow the first two figures.

D-C WORKING VOLTAGE FOR CAPACITANCE RANGE

Case	Capacitance	Vd _{dcw}
CN35	3,000 mmf	800
	6,000 mmf	600
	10,000 mmf	400
CN36	3,000 mmf	400
	6,000 mmf	400
	10,000 mmf	300
CN40	3,000 mmf	400
	6,000 mmf	300
	10,000 mmf	300
CN41	3,000 mmf	600
	6,000 mmf	600
	10,000 mmf	400

The d-c working voltage of a capacitor can be determined from the above table when the case size and value of capacitance are known.

CAPACITORS

FIXED, CERAMIC-DIELECTRIC

CC 20 AH 100 G
COMPONENT CASE | CAPACITANCE |
*CHARACTERISTIC *TOLERANCE

COMPONENT: CC signifies *fixed, ceramic-dielectric capacitor*.

CASE: Same as for fixed, mica-dielectric capacitors.

CAPACITANCE: Same as for fixed, molded, paper-dielectric capacitors.

NOTE: All fixed, ceramic-dielectric capacitors have a working voltage of 500 volts, d-c.

*Items starred are of interest primarily to depot and higher echelon repair personnel.

†This is not a JAN specification. These capacitors are covered by AWS C75/221.

TABLE OF REPLACEABLE PARTS

Model: Radio Set AN/CRN-10 Major Assembly: Radio Transmitter T-66/CRN-10

Reference Symbol	Army Stock Number Navy Stock Number British Ref Number	Name of Part and Description	Function	Mfr. and Desig. or Standard Type	Contr or Govt Dwg or Spec. No.
101-199 Series	2C6900-66	RADIO TRANSMITTER T-66/CRN-10: includes one complete set of vacuum tubes and one set of operating crystals; transmitter proper is housed in a metal cabinet approximately 26" wide x 25 $\frac{3}{4}$ " deep x 31" high; with tuning controls and switches on the front panel; junction box of $\frac{3}{8}$ " aluminum overall dimensions 6 $\frac{5}{8}$ " wide x 10 $\frac{7}{8}$ " deep x 11 $\frac{3}{8}$ " high mounted on left side of transmitter cabinet, all switches, indicator lamps and commutator studs on panels behind two hinged doors.	F		
B-101	3H3000A05-14	BLOWER: centrifugal; motor driven; single phase; 115 volt a-c; 60 cycles; 1.20 h.p.; 1750 rpm; direct coupled; fully enclosed; capacitor start and run; blower output 255 cubic feet per minute against a static back pressure of $\frac{1}{8}$ " of water and 235 cubic feet per minute against a static back pressure of $\frac{1}{4}$ " of water; operating temperature enclosed; condenser start and run; blower output 225 - 40°C (-40°F) to +60°C (+140°F); finish corrosion resistant; surface mounting slots spaced 3 $\frac{1}{2}$ " x 3 $\frac{1}{4}$ " on centers; mounting hole $\frac{3}{8}$ " diameter; overall dimensions 9 $\frac{1}{4}$ " high x 11 $\frac{15}{16}$ " wide x 8 $\frac{5}{16}$ " deep.	Transmitter ventilation	ILG Type B-9	
C-101	3K5527021	CAPACITOR: fixed; mica; 27-micromicrofarad; $\pm 10\%$; 2500 vdcw; low-loss phenolic case; overall dimensions, $1\frac{15}{32}$ " x $1\frac{23}{32}$ " x $1\frac{11}{32}$ "; boss type terminals molded in case and tapped for No. 6-32 machine screw.	Oscillator grid regeneration	CM55B270K	JAN-C-5
C-102	3K5536122	CAPACITOR: fixed; mica; 360-micromicrofarad; $\pm 5\%$; 2500 vdcw; low-loss phenolic case; case dimensions $1\frac{15}{32}$ " x $1\frac{23}{32}$ " x $1\frac{11}{32}$ "; boss type terminals molded in case and tapped for No. 6-32 machine screw.	Oscillator cathode degeneration	CM55B361J	JAN-C-5
C-103	3K5510321	CAPACITOR: fixed; mica; 10,000-micromicrofarad; $\pm 10\%$; 1200 vdcw; low-loss phenolic case; case dimensions, $1\frac{15}{32}$ " x $1\frac{23}{32}$ " x $1\frac{11}{32}$ "; boss type terminals molded in case and tapped for No. 6-32 machine screw.	Oscillator cathode bypass	CM55B103K	JAN-C-5
C-104		CAPACITOR: same as ref C-103.	Oscillator heater bypass		
C-105	3DB10-37	CAPACITOR: fixed; paper; dykanol; "A" (chlorinated diphenyl) impregnated; 10 mf; $\pm 10\%$; 1000 vdcw; 2000 volts d-c test; lead plated steel container aluminum painted; 4 $\frac{5}{8}$ " x 3 $\frac{3}{4}$ " x 1 $\frac{3}{4}$ " with separate mounting straps, end by mounting; two terminals on top.	Low-voltage supply filter	CD TJU-10100	Army Spec. F-34263-1 71-516 where applicable
C-106		CAPACITOR: same as ref C-103.	Oscillator screen bypass		Spec. F-34263-1

TABLE OF REPLACEABLE PARTS (Cont'd)

Major Assembly: Radio Transmitter T-66/CRN-10

Model: Radio Set AN/CRN-10

Reference Symbol	Army Stock Number Navy Stock Number British Ref Number	Name of Part and Description	Function	Mfr. and Desig. or Standard Type		Contr or Govt Org or Spec. No.
C-107	3DK9015V-15	CAPACITOR: variable; air dielectric; 15 mmf max.; 5 mmf minimum capacity; single section; 5 plates; aluminum; spaced 0.070"; break-down voltage 3000 volts rms a-c 60 cycles insulation; no trimmers; 1/4" shaft 1 3/4" long; rounded plates, silver plated 0.0002"; mounting surface 1 3/4" x 1 3/4"; rotor shaft solid; no insulation; rotor connection to be same side as stator connection; all metal surfaces silver plated and coated with a lacquer meeting Signal Corps Spec. SC-B-486-J; to operate in temperature range of -15°C to 71.1°C (-67°F to 163°F).	Oscillator plate tuning	Special H HFB-15-E		
C-108		CAPACITOR: same as ref C-103.	Meter M-101 bypass			
C-109		CAPACITOR: same as ref C-103.	Oscillator plate bypass			
C-110	3K5524122	CAPACITOR: fixed; mica; 240-micromicrofarad; $\pm 5\%$; 2500 vdcw; low-loss phenolic case; case dimensions, 1 5/8" x 1 25/32" x 1 11/32"; boss type terminals molded in case and tapped for No. 6-32 machine screws.	1st multiplier grid coupling	CM55B241J		JAN-C-5
C-111	3DB8-25	CAPACITOR: fixed; paper dielectric; dykanol "A" (chlorinated diphenyl) impregnated; 8-microfarad; $\pm 10\%$; 2000 vdcw; 4000 v d-c test; lead-plated steel container aluminum painted; 4 3/4" x 3 3/4" x 3 3/8"; height over bushings 6" with separate mounting straps; end lug mounting; two terminals on top per U.S. Army Spec. No. 71-516, temp. range -55°C to +75°C (-67°F to +167°F).	High voltage supply filter	CD TJU-20080		Spec. F-34263-1
C-112	3K5551222	CAPACITOR: fixed; mica; 5100 mmf; $\pm 5\%$; 1200 vdcw; 2500 volts d-c test; low loss bakelite case; case dimensions, 7/16" x 1 5/16" x 1 3/4"; boss type terminals molded in case and tapped for No. 6-32 machine screws.	1st multiplier bias bypass	CM55B512J		JAN-C-5
C-113		CAPACITOR: same as ref C-103.	1st multiplier cathode bypass			
C-114		CAPACITOR: same as ref C-103.	1st multiplier heater bypass			
C-115		CAPACITOR: same as ref C-103.	1st multiplier screen bypass			
C-116		CAPACITOR: same as ref C-107.	1st multiplier plate tuning			
C-117		CAPACITOR: same as ref C-112.	1st multiplier plate bypass			
C-118		CAPACITOR: same as ref C-112.	1st multiplier plate bypass			

C-119	3K5510121	CAPACITOR: fixed; mica; 100-micromicrofarad; $\pm 10\%$; 2500 vdcw; 2nd multiplier grid low-loss phenolic case; case dimensions, $1\frac{15}{32}" \times 1\frac{25}{32}" \times 1\frac{11}{32}"$; boss type terminals molded in case and tapped for No. 6-32 machine screws.	CM55B101K	JAN-C-5
C-120	3K5520222	CAPACITOR: fixed; mica; 2000-micro microfarad; $\pm 5\%$; 2500 vdcw; low-loss phenolic case; case dimensions, $1\frac{15}{32}" \times 1\frac{25}{32}" \times 1\frac{11}{32}"$; boss type terminals molded in case and tapped for No. 6-32 machine screws.	CM55B202J	JAN-C-5
C-121		CAPACITOR: same as ref C-120.		
C-122		CAPACITOR: same as ref C-103.		
C-123		CAPACITOR: same as ref C-103.		
C-124		CAPACITOR: same as ref C-120.		
C-125		CAPACITOR: same as ref C-107.		
C-126	3DKB10-47	CAPACITOR: fixed; paper dykanol "A" (chlorinated diphenyl) impregnated; 10-microfarad; $\pm 10\%$; 600 v d-c working; 1200 v d-c test; lead-plated steel case aluminum painted, $4\frac{5}{8}" \times 3\frac{3}{4}" \times 1\frac{1}{4}"$; with separate mounting; height over terminals $5\frac{1}{2}"$; straps end lug mounting; two terminals on top; per U.S. Army Spec. No. 71-516, temp. range -55°C to $+75^{\circ}\text{C}$ (-67°F to $+167^{\circ}\text{F}$).	CD TJU-6100 or equal	Spec. F-34263-1
C-127		CAPACITOR: same as ref C-120.		
C-128		CAPACITOR: same as ref C-103.		
C-129		CAPACITOR: same as ref C-120.		
C-130		CAPACITOR: same as ref C-103.		
C-131		CAPACITOR: same as ref C-103.		
C-132		CAPACITOR: same as ref C-120.		
C-133		CAPACITOR: same as ref C-120.		
C-134		CAPACITOR: same as ref C-103.		

Model: Radio Set AN/CRN-10 **TABLE OF REPLACEABLE PARTS (Cont'd)** **Major Assembly: Radio Transmitter T-66/CRN-10**

Reference Symbol	Army Stock Number Navy Stock Number British Ref Number	Name of Part and Description	Function	Mfr. and Desig. or Standard Type	Contr or Govt Dwg or Spec. No.
C-135		CAPACITOR: same as ref C-120.	Power amplifier screen bypass		
C-136		CAPACITOR: same as ref C-103.	Power amplifier bypass		
C-137		CAPACITOR: same as ref C-120.	Power amplifier screen bypass		
C-138		CAPACITOR: fixed; mica; 100 mmf; $\pm 10\%$; 500 vdw; 1200 volts d-c test; molded brown bakelite case; case dimensions, $\frac{1}{4}$ " x $\frac{3}{4}$ " x $\frac{3}{4}$ "; leads $1\frac{1}{4}$ " long wire out opposite ends.	Output monitor cathode bypass	CM20B101K	JAN-C-5
C-139	3DK9050V-70	CAPACITOR: variable; air dielectric; approximately 12.0 mmf maximum; 5.0 mmf minimum capacity per section; two sections, 3 rotor and 3 stator plates per section spaced 0.200"; breakdown voltage 6500 volts rms a-c 60 cycles; no trimmers; $\frac{3}{8}$ "-32 bushing; $\frac{1}{4}$ " diameter shaft $1\frac{1}{2}$ " long; all silver-plated surfaces to be coated with a lacquer meeting Signal Corps Spec. SC-B-486-J; to operate in temp. range of -55°C . to 71.1°C . (-67°F . to 163°F .)	Power amplifier plate tuning	Special Cardwell NP-50-DD	Spec. F-46130-12-2
E-101	3G115-32	BUSHING: ceramic; 2 piece lead through; stud; $\frac{7}{8}$ " diameter x $\frac{1}{8}$ " length overall; cap: $\frac{7}{8}$ " diameter x $\frac{1}{2}$ " long; overall assembled $1\frac{1}{2}$ " long x $\frac{7}{8}$ " diameter; machine screw hold .200" diameter; complete with bakelite and metal washers, studs and nuts; all metal parts cadmium plated.	Lead through bushing	AL Type No. 1174	Dwg F-12131-1-3
E-102	3G1250-32	POST INSULATOR: ceramic; $\frac{1}{2}$ " diameter x 2" long; tapped at each end No. 8-32 thread.	Spacing insulator	AL Type No. 1003	
E-103	3G1250-12.6	POST INSULATOR: ceramic; $\frac{1}{2}$ " diameter x $\frac{3}{4}$ " long; tapped at each end No. 8-32 thread.	Spacing insulator	AL Type No. 1402	
E-104	3G1250-8.5	POST INSULATOR: ceramic; $\frac{1}{2}$ " diameter x $\frac{1}{2}$ " long; tapped at each end No. 6-32 thread.	Spacing insulator	AL Type No. 1400	
E-105	3G1250-16	POST INSULATOR: ceramic; $\frac{1}{2}$ " diameter x 1" long; tapped at each end No. 8-32 thread.	Spacing insulator	AL Type No. 1000	
E-106	3G1250-48.3	POST INSULATOR: ceramic; $\frac{1}{2}$ " diameter x 3" long; tapped at each end No. 8-32 thread.	Spacing insulator	AL Type No. 1005	
E-107	3G1250-16.1	POST INSULATOR: ceramic; $\frac{3}{4}$ " diameter x 1" long; tapped at each end No. 10-32 thread.	Spacing insulator	AL Type No. 1010	

E-108	3G1250-12.5	POST INSULATOR: ceramic; $\frac{3}{8}$ " diameter x $\frac{3}{4}$ " long; tapped at each end No. 6-32 thread.	Spacing insulator	AL Type No. 1704	
E-109	3GK1250-16.23	POST INSULATOR: ceramic; $1\frac{1}{16}$ " x $\frac{1}{2}$ " x 1" long; tapped at each end for No. 8-32 thread.	Spacing insulator	BI	
E-110	2ZK5822-33	KNOB: black bakelite; no bushing; with set screw; skirt diameter $1\frac{3}{4}$ "; shaft diameter $\frac{1}{4}$ "; height $\frac{1}{8}$ "; shaft hole depth $\frac{1}{16}$ "; filled inductor line.	Control knob	KK Type S-381-3L	
E-111	#	RESISTOR BOARD: $\frac{3}{16}$ " natural bakelite XXX; dimensions, 6" x $2\frac{7}{16}$ " x $\frac{3}{16}$ ".	Support resistors		Drawing F-35189-1
E-112	#	RESISTOR BOARD: $\frac{1}{8}$ " natural bakelite XXX; dimensions $6\frac{1}{8}$ " x $2\frac{1}{4}$ " x $\frac{1}{8}$ ".	Support resistors		Drawing F-36301-1
E-113	#	RESISTOR BOARD: $\frac{1}{8}$ " natural bakelite XXX; dimensions, $2\frac{1}{2}$ " x $3\frac{3}{4}$ " x $\frac{1}{8}$ ".	Support resistors		RA-4303-1
F-101		FUSE: fusetron; 2 ampere; 250 volts; ferrule type; overall length 2"; diameter of tube $\frac{1}{2}$ "; diameter over ferrules $\frac{9}{16}$ "; blows 50% overload in 200 seconds; 100% overload in 70 seconds; 500% overload in 12 seconds.	Blower protection	BUSS FRN-2	
F-102		FUSE: fusetron; $6\frac{1}{4}$ amperes; 250 volts; ferrule type; overall length 2"; diameter of tube $\frac{1}{2}$ "; diameter over ferrules $\frac{9}{16}$ "; blows 50% overload in 230 seconds; 100% overload in 80 seconds; 500% overload in 13 seconds.	600 volt transformer protection	BUSS FRN-6 $\frac{1}{4}$	
F-103		FUSE: fusetron; 8/10 amperes; 250 volts; ferrule type; overall length 2"; diameter of tube $\frac{1}{2}$ "; diameter over ferrules $\frac{9}{16}$ "; blows 50% overload in 230 seconds; 100% overload in 75 seconds; 500% overload in 13 seconds.	Rectifier filament transformer protection	BUSS FRN-8 $\frac{1}{10}$	
F-104		FUSE: same as ref F-102.	High voltage transformer protection		
F-105		FUSE: fusetron; 1.0 ampere; 250 volts; ferrule type; overall length 2"; diameter of tube $\frac{1}{2}$ "; diameter over ferrules $\frac{9}{16}$ "; blows 50% overload in 260 seconds; 100% overload in 80 seconds; 500% overload in 11 seconds.	Power amplifier filament transformer protection	BUSS FRN-1	
F-106		FUSE: same as ref F-103.	Oscillator and multiplier filament transformer protection		
F-107		FUSE: fusetron; $\frac{1}{2}$ ampere; 250 volts; ferrule type; overall length 2"; diameter of tube $\frac{1}{2}$ "; diameter over ferrules $\frac{9}{16}$ "; blows 50% overload in 200 seconds; 100% overload in 68 seconds; 500% overload in 13 $\frac{1}{2}$ seconds.	Bias supply transformer protection	BUSS FRN- $\frac{1}{2}$	

TABLE OF REPLACEABLE PARTS (Cont'd)

Model: Radio Set AN/CRN-10

Major Assembly: Radio Transmitter T-66/CRN-10

Reference Symbol	Army Stock Number Navy Stock Number British Ref Number	Name of Part and Description	Function	Mfr. and Design or Standard Type	Contr or Govt Dwg or Spec. No.
H-101	3GK1838-15.6	WASHER: insulating; bakelite any color; Grade XP; No. 7 (.201" ID); $\frac{3}{4}$ " OD; $\frac{1}{16}$ " thick.	Insulator		F-12058-3-45
H-102	3GK1838-15.5	WASHER: insulating; bakelite any color; Grade XP; No. 15 (.0180" OD); $\frac{3}{8}$ " OD; $\frac{1}{16}$ " thick.	Insulation		F-12058-3-46
H-103	6LK31132-1	STUD: brass rod; $\frac{1}{2}$ " long; threaded No. 6-32; 0.015" x 30° chamfer both ends; cadmium plated.			F-8262-3-16
H-104	6L4775-22.10K	SCREW: captive; free turning brass; $1\frac{3}{8}$ " long; head 1" diameter x $\frac{3}{8}$ " knurled; shank 0.237" diameter x $\frac{1}{16}$ " long unthreaded; threaded section $\frac{5}{16}$ " long x $\frac{5}{16}$ -18 thread; finish dull white nickel plate.	Chassis mounting screw		F-32666-12-55
H-105	2C6900-66/1	INSERT: chamet brass rod; $\frac{5}{8}$ " diameter; $\frac{1}{2}$ " long; dull white nickel plate finish; tapped section $\frac{1}{8}$ " long; tapped $\frac{5}{16}$ -18; shoulder $\frac{3}{8}$ " long; sleeve $\frac{1}{8}$ " long; untapped section 0.343" diameter x $\frac{3}{8}$ " long.	Captive screw retainer		F-32667-12-30
H-106	2ZK7857-9	RETAINER RING: $\frac{1}{16}$ " OD; gap $\frac{1}{32}$ "; No. 18 (.040) spring temper brass wire.	Holds captive screw		F-32668-1-3
H-107	3GK1838-15.3	WASHER: insulating; bakelite any color; Grade XP; No. 15 (.0180" ID) x $\frac{5}{8}$ " OD x $\frac{1}{64}$ " thick.			F-12058-3-183
H-108	3GK1838-15.4	WASHER: insulating; bakelite any color; Grade XP; No. 18 (.0169" ID) x $\frac{3}{8}$ " OD x $\frac{5}{16}$ " thick.			F-12058-3-40
I-101	2ZK5995	PILOT LIGHT ASSEMBLY: consisting of:	Overload indicator		
I-101A		SOCKET: lamp, bracket and shell cadmium plated steel; tinned brass terminal lugs bakelite insulating washers; single contact spring tension miniature bayonet base; one hole for No. 6-32 machine screw or rivet mounting. "EL" shaped mounting bracket; mounting surface approximately $\frac{3}{4}$ " x $\frac{1}{2}$ ".		SL No. 708	
I-101B		LAMP: miniature bayonet single contact base; 6-8 volt; 1.7 watt; Mazda Lamp No. 51.		GE	
I-101C		LENS: internally frosted.			
I-102	2ZK5992.3	PANEL LIGHT ASSEMBLY: consisting of:	Filament "ON" indicator		
I-102A		SOCKET ASSEMBLY: lamp; shell zinc alloy; cronak finish; panel ring; double contact spring tension bayonet socket for S-6 bulb; retracting ferrule of threaded bakelite; shell $1\frac{1}{4}$ " OD threaded for panel mounting; length of threaded shell $1\frac{3}{8}$ "; panel ring $1\frac{1}{2}$ " OD extended depth $1\frac{5}{8}$ " overall; fungus treated.		KL 660 Bulls-Eye	

I-102B		LENS: internally frosted green glass lens mounted in ring locking mount.			KL PUL-660 Bulls-Eye
I-102C		LAMP: double contact bayonet base; 120 volts; 6 watt clear; S-6 bulb.			GE S-6
I-103	2ZK5992.5	PANEL LIGHT ASSEMBLY: same as ref I-102; except for color.	Plate "ON" indicator		
I-103A		SOCKET ASSEMBLY: same as ref I-102A.			
I-103B		LENS: internally frosted; red glass lens mounted in ring locking mount.			
I-103C		LAMP: same as ref I-102C.			
I-104		PANEL LIGHT ASSEMBLY: same as ref I-101.			
I-104A		SOCKET: same as ref I-101A.	Crystal holder illumination		
I-104B		LAMP: same as ref I-101B.			
J-101	2ZK5584	JACK: bright brass nickel plated; overall length $\frac{7}{8}$ "; $\frac{3}{8}$ " mounting hole.	Connection	BU No. PJ-963	
J-102	2Z7123	RECEPTACLE: aluminum shell overall $1\frac{5}{8}$ " x $1\frac{5}{8}$ " x $1\frac{11}{32}$ " long; mounting centers $1\frac{1}{4}$ " x $1\frac{1}{4}$ "; $1\frac{3}{8}$ "-18 thread; male bakelite insert; contacts; 4 No. 12 and 1 No. 16; contact spacing $\frac{1}{8}$ "; shell grain metallic sand blast satin.	Connection	APH AN3102-22-13P	Spec. AN-W-C-591
J-103	2ZK8672.22	RECEPTACLE: aluminum shell overall $1\frac{5}{8}$ " x $1\frac{5}{8}$ " x $1\frac{11}{32}$ " long; mounting centers $1\frac{1}{4}$ " x $1\frac{1}{4}$ "; $1\frac{3}{8}$ "-18 thread; male low loss mica filled; bakelite insert; contacts 2 No. 12; contact spacing $\frac{1}{8}$ "; shell finish fine grain metallic sand blast satin.	Connection	APH 97-3102-22-8PT	Spec. AN-W-C-591
K-101	2ZK7650-C.1	RELAY: overload protection; 2 sets of SPST contacts; No. 18 gauge silver; both sets normally open and one SPST microswitch; contacts normally closed; open contacts rated at one ampere inductive at 50 watts; microswitch contacts rated at 10 amperes 125 volts; contact insulation low loss bakelite; microswitch contact resistance low; other contacts: contact resistance low; two solenoid type concentric wound coils; coil No. 1 approximately 0.5 ohms resistance to operate from 0.9 to 1.0 amp. d-c; coil No. 2 1300 ohms resistance to operate from 100 volts d-c with coil No. 1 not energized; one common coil connection; relay designed for panel mounting with connection lugs extending through panel; overall dimensions $4\frac{3}{4}$ " x $2\frac{1}{2}$ " x $1\frac{7}{8}$ "; mounting dimensions $1\frac{3}{4}$ " x $1\frac{1}{8}$ "; when mounted, axis of relay coil is perpendicular to plane of panel.	Meter protection	CPC Type C or AUE Type AMS	F-34436-1

TABLE OF REPLACEABLE PARTS (Cont'd)
Model: Radio Set AN/CRN-10 **Major Assembly: Radio Transmitter T-66/CRN-10**

Reference Symbol	Army Stock Number Navy Stock Number British Ref Number	Name of Part and Description	Function	Mfr. and Desig. or Standard Type	Contr or Govt Dwg or Spec, No.
K-102		RELAY: time delay SPST microswitch, contacts normally open; time delay period 45 seconds \pm 5 seconds; synchronous motor type; contacts rated to carry 10 amperes at 150 volts, 60 cycles a-c; relay shall withstand 250 hour periods of operation and withstand ten thousand cycles of operation; synchronous motor 3.8 watts; motor terminals marked "M"; switch terminals marked "S"; overall dimensions $4\frac{3}{4}"$ x $3\frac{3}{4}"$ x $3\frac{3}{4}"$; mounting surface $3\frac{3}{4}"$ x $3\frac{3}{4}"$.	Plate power delay	CMR Model TD	Spec. E-34434-1 F-34436-1 DWG F-34435-2
K-103	2ZK7650-G.8	RELAY: remote filament contactor; two microswitches; contacts normally open; contacts of both switches connected in parallel; contact rating 10 amperes at 150 volts; 60 cycles; a-c solenoid type; coil wound for 48 volt d-c operation; coil resistance 1300 ohms; bakelite insulation; overall dimensions of relay $5" \times 2\frac{1}{2}" \times 1\frac{3}{4}"$; mounting dimensions, $1\frac{3}{4}" \times 1\frac{1}{8}"$; when mounted axis of relay coil is perpendicular to plane of panel.	Remote filament contactor	CPC Type G No. B-11905 or equal	Spec. F-34436-1
L-101	3CK326-154-4	COIL: r-f choke; 500 turns No. 27 AWG wire, double silk insulation; choke made up of 5 pie wound sections on a ceramic rod $\frac{1}{2}"$ diameter x $2\frac{1}{2}"$ long; rated inductance 1.0 millihenry at 625 ma. d-c; winding coated with clear lacquer; resonant frequency 3.0 mc; measured inductance 1070 microhenries; modified to mount on two "EL" brackets $\frac{1}{2}"$ wide x $1\frac{1}{4}" \times \frac{1}{16}"$; mounting area $\frac{1}{16}" \times \frac{1}{8}"$; modified to make coil connections by means of two straps; current rating 0.20 amperes.	Oscillator cathode impedance	N Type R-154-V Modified	Dwg. RA-772-1
L-102	3CK372-9	COIL: r-f choke; 6 turns No. 12 AWG; bare copper wire silver plated; clear lacquered; pitch 0.162"; inside diameter of coil $\frac{1}{2}"$; total length of coil, including axial leads $2\frac{1}{2}"$. Resonant frequency 56 megacycles; inductance 0.25 microhenries; current rating 6.5 amperes.	Parasitic suppressor	F	Dwg. F-23923-1-2
L-103	3CK367-3	CHOKER: filter; 1810 turns No. 24 AWG wire enamel insulation; 8 henries at 500 ma. varnish impregnation; core material 26 gauge EI-13A; case $5\frac{5}{8}" \times 6\frac{7}{8}" \times 4\frac{5}{16}"$; height over terminals $6\frac{7}{8}"$; bushing type terminals through top of case; mounting dimensions, $6\frac{3}{8}" \times 3\frac{3}{16}"$; resistance 50 ohms; 25 volts across terminals; 2500 volts insulation from core; 2500 volts insulation to ground (case).	600 volt filter choke	AT S-57038	Spec. F-34204-1 F-33076-1 Dwg. F-34205-1
L-104	3CK372-7	COIL: tank; radio frequency; 8 turns No. 14 B&S gauge bare copper wire silver plated; solenoid coil wound on grooved ceramic coil form $1\frac{3}{4}"$ in diameter x $2\frac{1}{2}"$ long; coil tap at $1\frac{1}{4}$ turns from top of coil; winding pitch 0.156"; mounted by three "EL" brackets $\frac{1}{16}" \times \frac{1}{16}" \times \frac{1}{16}"$; coil end connections brought out to lugs on top edge of coil, resonant frequency 53 megacycles; inductance 2.43 microhenries; current rating 4.1 amperes.	Oscillator plate coil	F	Dwg. F-34313-1

L-105	3CK367-5	<p>CHOKE: filter, 2280 turns No. 26 AWG wire enamel insulation; 12 henries at 350 ma.; varnish impregnation; core material 26 gauge EI-13A; case $5\frac{5}{8}'' \times 6\frac{7}{8}'' \times 4\frac{5}{16}''$; height over terminals $6\frac{3}{8}''$; bushing type terminals through top of case; mounting dimensions $6\frac{3}{8}'' \times 3\frac{9}{16}''$; resistance 100 ohms; 35 volts pulsating d-c across terminals; 2500 volts rms 60 cycles a-c insulation from core and case; 2500 volts rms 60 cycles a-c insulation from ground (case).</p>	1000 volt filter choke	AT S-57039	Spec. F-33076-1 F-34206-1 Dwg. F-34207-1
L-106	3CK361-1	<p>COIL: choke; radio frequency; 45 turns No. 26 B&S gauge single silk cover copper wire; solenoid wound on $\frac{3}{8}''$ diameter Isolantite stand-coil form $1\frac{3}{4}''$ long; close wound, lug type terminals at ends of coil form; winding covered with light coat of clear G.E. Glyptal No. 1202 baked for 2 hours at 125°C (257°F); winding anchored at each end with 3 cord, No. 40 barbour machine thread; resonant frequency 10.8 megacycles; inductance 21 microhenries; current rating 0.25 amperes.</p>	1st multiplier grid choke	F	Dwg. RA-1729-1
L-107		<p>COIL: tank; radio frequency; $1\frac{3}{4}$ turns No. 8 B&S gauge bare copper wire silver plated; solenoid wound; $1\frac{3}{16}''$ inside diameter; one coil lead folded back under coil (see dwg.) and fitted with G.E. No. 1444451 lug; coil coated with clear lacquer after plating; pitch of coil $\frac{5}{8}''$; resonant frequency 73 megacycles; inductance 0.15 microhenries; current rating 16.5 amperes.</p>	1st multiplier plate coil	F	Dwg. F-34312-1
L-108	3CK372-6	<p>COIL: r-f choke; 100 turns No. 26 B&S gauge single silk cover copper wire; close wound; solenoid wound on $\frac{1}{2}''$ diameter Isolantite stand-off coil form $2''$ long; lug type terminals at ends of coil form; winding covered with light coat of clear G.E. Glyptal No. 1202 baked for 2 hours at 125°C (257°F) winding anchored at each end with 3 cord No. 40 barbour machine thread. Resonant frequency 27 megacycles; inductance 31.6 microhenries. Current rating 0.25 amperes.</p>	1st multiplier plate choke	F	Dwg. F-15904-1
L-109	3CK372-5	<p>COIL: r-f choke: 55 turns No. 26 B&S gauge single silk cover copper wire; close wound; solenoid wound on $\frac{3}{8}''$ diameter Isolantite stand-off coil form $1\frac{3}{4}''$ long; lug type terminals at ends of coil form; winding covered with light coat of clear G.E. Glyptal No. 1202 baked for 2 hours at 125°C (257°F); winding anchored at each end with 3 cord, No. 40 barbour machine thread; resonant frequency 40 megacycles; inductance 10.1 microhenries; current rating 0.25 amperes.</p>	2nd multiplier grid choke	F	Dwg. F-15905-1
L-110		<p>COIL: tank, radio frequency; 2 turns No. 8 B&S gauge bare copper wire silver plated; solenoid wound; $1\frac{1}{16}''$ inside diameter; pitch $\frac{3}{8}''$; coil leads bent into center of coil then bent out along coil axis; G.E. No. 1444451 lugs silver soldered to coil leads; length of coil center to center of holes in lugs $2''$; entire coil, except lugs; coated with clear lacquer; resonant frequency 58 megacycles; inductance 0.23 microhenries; current rating 16.5 amperes.</p>	2nd multiplier plate coil	F	Dwg. F-34311-1
L-111		<p>COIL: link, radio frequency; deformed closed loop consisting of $36''$ of No. 10 B&S gauge bare copper wire; silver plated; and coated with clear lacquer; for coil configuration see drawing F-38481-2; resonant frequency 71 megacycles; inductance 0.15 microhenries; current rating 10.4 amperes.</p>	R-F driver to power	F	F-38481-2

TABLE OF REPLACEABLE PARTS (Cont'd)
Model: Radio Set AN/CRN-10 **Major Assembly: Radio Transmitter T-66/CRN-10**

Reference Symbol	Army Stock Number Navy Stock Number British Ref Number	Name of Part and Description	Function	Mfr. and Desig. or Standard Type	Contr or Govt Dwg or Spec. No.
L-112	3CK372-4	COIL: r-f choke; 28 turns No. 26 B&S gauge S.S.C. copper wire; turns spaced equal to wire diameter; solenoid wound on $\frac{3}{8}$ " diameter; Isolanite standoff coil form $1\frac{1}{4}$ " long; lug type terminals at ends of coil form; winding covered with light coat of clear G.E. Glyptal No. 1202 baked for 2 hours at 125°C (257°F); winding anchored at each end with 2 cord, No. 40 barbour's machine thread; resonant frequency 145 megacycles; inductance 2.4 microhenries; current rating 0.25 amperes.	2 multiplier plate choke	F	F-15906-1
L-113		COIL: same as ref L-112.	Power amplifier grid choke		
L-114	3CK367-4	CHOKE: filter; 1820 turns No. 28 AWG wire enamel insulation; 10 henries at 100 ma. varnish impregnation; core material 26 gauge EL-12; case $4\frac{3}{4}$ " x $2\frac{5}{16}$ " x $4\frac{1}{16}$ "; height over terminals $5\frac{5}{8}$ "; bushing type terminals through bottom of case; mounting dimensions $4\frac{1}{4}$ " x $2\frac{1}{4}$ "; resistance 80 ohms; 8 volts across terminals; 2500 volts insulation from core; 2500 volts insulation from case.	Bias supply choke	F	Spec. F-34202-1 F-33076-1 Dwg. F-34203-1
L-115		COIL: tank; radio frequency; 1 "U" turn of $\frac{3}{16}$ " O D x No. 20 stubs gauge seamless soft copper tubing $5\frac{3}{4}$ " long x $2\frac{3}{16}$ " inside diameter; within the tubing and projecting from both ends is a section No. 7 soft tempered copper wire; wire and tubing are silver-soldered at the ends of the tubing; each end of the wire extending from the tube is bent into a $1\frac{1}{16}$ " x $.7$ " "U" in a plane perpendicular to the plane of tubing "U"; this entire assembly is silver plated; resonant frequency above 75 megacycles; inductance 0.30 microhenries; current rating 21 amperes.	Power amplifier grid coil	F	Dwg. F-34379-2
L-116		COIL: r-f choke; 55 turns No. 27 AWG wire close wound on a $\frac{1}{4}$ " diameter x $1\frac{1}{4}$ " long ceramic coil form; $1\frac{1}{2}$ " wire leads taken from $\frac{5}{16}$ " metal cap on each end of coil form; resonant frequency above 75 megacycles; inductance 3.9 microhenries; current rating 0.20 amperes.	Monitor meter isolation	CC CI-13	
L-117		COIL: tank, radio frequency; 1 deformed "U" turn of $\frac{3}{16}$ " OD x No. 20 gauge seamless soft copper tubing; silver plated and coated with clear lacquer; overall dimensions $4\frac{13}{16}$ " x $2\frac{1}{16}$ " x $1\frac{1}{4}$ "; resonant frequency 62 megacycles; inductance 0.20 microhenries; current rating 21 amperes.	Power amplifier plate coil	F	Dwg. F-34310-1
L-118		COIL: p-a output assembly; overall dimensions $4\frac{9}{16}$ " x $3\frac{7}{8}$ " x 3"; rated current 10.4 amperes; resonant frequency 37 megacycles; inductance 0.49 millihenries; assembly consists of:	Power amplifier output link	F	Dwg. RA-4360-2

L-118A		TUBE ASSEMBLY: $\frac{7}{6}$ " OD x $\frac{1}{32}$ " wall soft copper tubing; one end bent on a 90° turn at a radius of $\frac{1}{32}$ "; with a flange plate of free turning brass rod; overall $\frac{3}{8}$ " x $1\frac{1}{2}$ " diameter; center hole .0442"; three (3) mounting holes tapped 4-40 thread at 90° intervals around diameter of dimension .812"; flange plate cut off parallel to plane of opposite mounting holes to a point $\frac{5}{16}$ " from centerline through opposite holes; tube projected through flange for a distance of $\frac{1}{16}$ " and silver soldered; entire assembly silver plated.					
L-118B		MOUNTING PLATE: $4\frac{3}{8}$ " x $3\frac{1}{2}$ " x $\frac{1}{16}$ " brass cadmium plated; bent with two $\frac{1}{4}$ " lips on long dimension and one $\frac{1}{4}$ " lip on the short dimension; drilled and slotted for mounting and to receive tube assembly.					
L-118C		BUSHING: mycalex; overall dimensions $\frac{1}{32}$ " x $\frac{1}{16}$ " diameter; used as a separator on tube assembly.	Separator on tube assembly	F	Dwg. F-36261-1	To conform with AWS C39.2-1944 where applicable	
L-118D		BEADS: Alsimag No. W-4571.					
L-118E		WIRE: No. 10 B&S gauge copper, silver plated.					
L-119		COIL: tank; radio frequency; "U" turn of No. 12 gauge solid copper wire, bare, silver plated and clear lacquer; each end of coil silver-soldered to No. 1444451 G.E. Terminal; "U" turn $\frac{4}{64}$ " wide (inside dimension); "U" turn bent into "EL" form; loop end $2\frac{5}{16}$ " long; lug end 1-21/24" long to center of lug holes; resonant frequency above 75 megacycles; inductance 0.10 microhenries; current rating 6.5 amperes.	R-F monitor pick-up coil				
M-101	3FK895-9	METER: d-c milliammeter; 0-5 ma; flush mounting; bakelite case; 3.38" in diameter; 0.63" flange; 2.75" body diameter; internal resistance 5.7 ohms; special 50 division scale marked 0-100; no scale caption; calibrated for non-magnetic panel; moisture and fungus resistance treatment to operate over temperature range -55°C to 71.1°C (-67°F to 163°F).	Circuit operation indicator	WI Model 301			
M-102		METER: d-c milliammeter; 0.5 ma; flush mounting; bakelite case 3.38" in diameter; .63" flange; 2.75" body diameter; internal resistance 5.7 ohms; standard scale; moisture and fungus resistance treatment.	Output indicator	MR35W005DCMA	C 39.2-1944		
N-101	#	NAME PLATE (Filament): "Farlite" thermo setting plastic; dimensions $1\frac{1}{2}$ " x $\frac{1}{32}$ " x $\frac{1}{16}$ ".	Identify switch		Dwg. F-38090-3-1		
N-102	#	NAME PLATE (Plate): "Farlite" thermo setting plastic; dimensions $1\frac{1}{2}$ " x $\frac{1}{32}$ " x $\frac{1}{16}$ ".	Identify switch		Dwg. F-38090-3-2		
N-103	#	NAME PLATE (On): "Farlite" thermo setting plastic; dimensions $1\frac{1}{4}$ " x $\frac{1}{32}$ " x $\frac{1}{16}$ ".	Identify switch		F-38090-3-3		
N-104	#	NAME PLATE (Off): "Farlite" thermo setting plastic; dimensions $1\frac{1}{4}$ " x $\frac{1}{32}$ " x $\frac{1}{16}$ ".	Identify switch		F-38090-3-4		
N-105	#	NAME PLATE (Power Supply Section): "Farlite" thermo setting plastic; dimensions $3"$ x $\frac{1}{32}"$ x $\frac{1}{16}"$.	Identify switch		F-38870-3-3		

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TABLE OF REPLACEABLE PARTS (Cont'd)

Model: Radio Set AN/CRN-10

Major Assembly: Radio Transmitter T-66/CRN-10

Reference Symbol	Army Stock Number Navy Stock Number British Ref Number	Name of Part and Description	Function	Mfr. and Desig. or Standard Type	Contr or Govt Dwg or Spec. No.
N-106	#	NAME PLATE (Tuning Indicator): "Farlite" thermo setting plastic; dimensions $2" \times \frac{1}{32}" \times \frac{1}{16}"$.	Identify switch		F-38089-3-4
N-107	#	NAME PLATE (R-F Section): "Farlite" thermo setting plastic; dimensions $3" \times \frac{1}{32}" \times \frac{1}{16}"$.	Identify switch		F-38870-3-1
N-108	#	NAME PLATE (R-F Output): "Farlite" thermo setting plastic; dimensions $2" \times \frac{1}{32}" \times \frac{1}{16}"$.	Identify switch		F-38089-3-6
N-109	#	NAME PLATE (PA Plate): "Farlite" thermo setting plastic; dimensions $2" \times \frac{1}{32}" \times \frac{1}{16}"$.	Identify switch		F-38089-3-8
N-110	#	NAME PLATE (XTAL Osc.): "Farlite" thermo setting plastic; dimensions $2" \times \frac{1}{32}" \times \frac{1}{16}"$.	Identify switch		F-38089-3-9
N-111	#	NAME PLATE (Overload): "Farlite" thermo setting plastic; dimensions $1\frac{1}{2}" \times \frac{1}{32}" \times \frac{1}{16}"$.	Identify switch		F-38869-3-23
N-112	#	NAME PLATE (Reset): "Farlite" thermo setting plastic; dimensions $1\frac{1}{2}" \times \frac{1}{32}" \times \frac{1}{16}"$.	Identify switch		F-38869-3-23
N-113	#	NAME PLATE (1st Multiplier Plate): "Farlite" thermo setting plastic; dimensions $2" \times \frac{1}{32}" \times \frac{1}{16}"$.	Identify switch		F-38089-3-11
N-114	#	NAME PLATE (2nd Multiplier Plate): "Farlite" thermo setting plastic; dimensions $2" \times \frac{1}{32}" \times \frac{1}{16}"$.	Identify switch		F-38089-3-53
N-115	#	NAME PLATE (Tuning Indicator): "Farlite" thermo setting plastic; dimensions $2" \times \frac{1}{32}" \times \frac{1}{16}"$.	Identify switch		F-38089-3-7
N-116	#	NAME PLATE (Lock-Release): inside the chassis; "Farlite" thermo setting plastic; dimensions $1\frac{1}{16}" \times 1\frac{1}{4}" \times \frac{1}{16}"$.	Identify switch		F-41796-1
N-117	#	NAME PLATE (T-66/CRN-10): No. 20 (.032") GA. $25\frac{1}{2}"$ H sheet aluminum; dimensions $3\frac{1}{16}" \times 1\frac{3}{16}" \times \frac{1}{16}"$.			RA-4720-3-2
O-101	2ZK8063-1	ROLLER ASSEMBLY: drawer slide; consisting of a grooved and slotted brass roller $1"$ diameter $\times \frac{1}{32}"$ overall attached to a $2\frac{1}{2}" \times \frac{3}{4}"$ cold rolled steel mounting plate; attachment stud of $\frac{1}{2}"$ diameter $\times .703"$ cold rolled steel; roller spaced from mounting plate by $\frac{25}{64}"$ ID $\times \frac{3}{4}"$ OD $\times 0.032"$ steel washer; all cold rolled steel items cadmium or zinc plated.	Drawer slide assembly r-f and power supply chassis	F	Dwg. F-36004-1
O-102	2Z3290	COUPLING: shaft; insulated; flexible; for $\frac{1}{4}"$ shaft.	Condenser shaft coupling	C Type A	

O-103	3ZK1029-1	CLIP: fuse; 30 amperes; 250 volts; cadmium plated.	Fuse clip mounting	SD SK-2371	
O-104	3ZK1029-2	CLIP: fuse; 60 amperes; 600 volts; cadmium plated for 1 1/8" diameter ferrule.	Fuse clip mounting	SD SK-2362	Dwg. RA-2990-1
O-105	2Z3876-64	DIAL DRIVE ASSEMBLY: consisting of 2 locking dial assemblies mounted on a 5 3/4" x 1 1/2" x 1/4" channel of No. 16 gauge cold rolled steel cadmium plated; dial assemblies mounted on 2 3/4" centers; assembly mounted to rear of equipment panel by 1 1/4" long x .201" ID x 3/8" OD cadmium plated; spacers and No. 10-32 x 3/4" binding head screws dull white nickel plate painted lusterless olive drab.	Condenser dial support		Dwg. RA-4223-1
O-106	3ZK1021-4	CLIP: fuse; 60 amperes; 250 volts; cadmium plated.	Fuse clip mounting	SD SK-2372	
O-107	3FK2827-5	METER GUARD: molded transparent polystyrene; overall dimensions 3 1/2" OD x 0.190" thick; meter adjusting hole 3/8" ID.	Meter glass protection	IM	F-39684-2
O-108	2ZK3006	CONNECTOR: tube cap; consisting of a 3 7/16" x 9/16" strap of 0.005" thick copper sheet, silver plated.	Tube cap connector	F	F-39608-1-1
O-109	2ZK3006-1	CONNECTOR: tube cap; consisting of a 3 15/16" x 9/16" strap of 0.005" thick copper sheet, silver plated.	Tube cap connector	F	F-39608-1-2
O-110	2ZK1619-5	CAP ASSEMBLY: tube; consisting of 2 No. 25 B & S gauge x 1 7/16" x 9/16" phosphor bronze springs and 4 No. 22 B & S gauge 1" x 5/16" "V" shaped radiator fins riveted together using 4 1/16" x 1/8" round-head brass rivets; all parts zinc or cadmium plated.	Tube cap	F	F-39446-1
O-111	6ZK982 F1	FILTER: air; consisting of a galvanized steel frame 9 15/16" x 9 15/16" x 3/4" containing a spun glass filter.	Filter cooling air	AZ Type R-82	F-36307-2
O-112	2ZK558-1	SLIDE BAR ASSEMBLY: consisting of two slide rods of 9/16" diameter x 22 31/32" cold rolled steel; two stops of 1/4" x 5/8" x 2 5/16" cold rolled steel; rollers; stop pins and washers; all metal parts cadmium plated.	Cabinet slide bracket	F	F-360000-1-1
O-113	2ZK558-2	SLIDE BAR ASSEMBLY: consisting of two slide rods of 9/16" diameter x 22 31/32" cold rolled steel; two stops of 1/4" x 5/8" x 2 5/16" cold rolled steel; rollers; stop pins and washers; all metal parts cadmium plated.	Cabinet slide bracket	F	F-36000-1-2
O-114	2Z2636-3	CLAMP: cable; fits Amphelod No. 20 and 22 shell fits 7/8" OD cable; overall dimensions 1 3/8" diameter x 1 3/8" long; thread 1 3/8"-18; uses two 8-32" x 7/8" machine screws.	Clamp cable to fitting	APH AN3057-12	
O-115	2Z8502-PH100	SHOCK MOUNTING: 100 pound capacity; consisting of a rubber insert 2" in diameter x 1 1/8" thick; center metal ferrule 0.991" ID; mounted in an inverted cup shaped plate holder 3" x 3" square; assembly overall 3" x 3" x 1.625" high; mounting holes on 2 1/2" centers.	Equipment mounting	L No. 204-P-100	

TABLE OF REPLACEABLE PARTS (Cont'd)

Model: Radio Set AN/CRN-10 Major Assembly: Radio Transmitter T-66/CRN-10

Reference Symbol	Army Stock Number Navy Stock Number British Ref Number	Name of Part and Description	Function	Mfr. and Desig. or Standard Type	Contr or Govt Dwg or Spec. No.
O-116	2Z8404-9	SHOCK MOUNTING: 25 pound capacity; consisting of a rubber insert 2" in diameter x 1" thick center metal ferrule 0.391" ID mounted in a mounting plate 2 1/4" x 2 1/4" square; mounting holes on 1 3/4" centers.	Equipment mounting	L No. 204-P-25	
O-117	6R55230	WRENCH SET SCREW: fluted socket; "rustproofed"; No. 6 Bristo.			
O-118	6RK55230-10	WRENCH SET SCREW: fluted socket; "rustproofed"; No. 10 Bristo.			
O-119	3F2560-3	METER CASE AND GLASS ASSEMBLY: for Weston No. 301 Navy type meter; 3 1/2" black bakelite case.	Meter casing	WI	
O-120	2Z2636-4	CLAMP: cable; die cast aluminum fits amphenol No. 12 and No. 12S shell; fits 3/8" OD cable; overall dimensions 2 5/8" diameter x 1" long; threaded 5/8-24; uses two 5-40 x 1/2" machine screws; finish fine grain metallic sand blast satin.		APH AN-3057-4	
O-121		COVER ASSEMBLY: rubber for No. 7102 plug; consisting of a plug hood and a contact cover; overall dimensions 3" long x 2 1/4" OD; both sections held together by 5 1/2" chain.		HUBB FT-12067	
O-122		FILTER: dust filter; aluminum; dimensions 9 11/16" x 7 1/16" x 1/2".	Dust filter	AZ Type P4	Dwg. RA-4767-2B
O-123		FILTER: same as ref O-122.			
O-124		FILTER: same as ref O-122.			
P-101	2ZK7111.23	PLUG: one piece spring brass; nickel plated finish; length 1 3/16" overall; deep slotted.	Connection	BU No. PL-962	
P-102	2Z3066-8	PLUG: aluminum shell overall; 1 19/32" diameter x 2 1/8" long; threaded 1 3/8"-18 bakelite male insert; contacts 4 No. 12 and 1 No. 16; 1/8" contact spacing. Shell finish fine grain metallic sand blast satin.	Connection	APH AN3106-22-13S	Spec. AN-W-C-591
R-101	3RC41BF104M	RESISTOR: fixed; 100,000 ohms; $\pm 20\%$; 2 watt; composition; completely enclosed in molded bakelite; body 1 3/4" x 5/16" diameter; 2 wire leads 1 1/2" long; one lead from each end of resistor; lead mounting; color coding RMA.	Oscillator grid leak	RC41BF104M	C75.7-1943
R-102	3RC41BF431J	RESISTOR: fixed; 430-ohm; $\pm 5\%$; 2-watt; composition; insulated; body 1 7/8" x .342" diameter; 2 wire leads 1 1/2" long; one lead from each end of resistor; lead mounting; color coding RMA.	Oscillator cathode bias	RC41BF431J	C75.7-1943

R-103	3ZK6635-18	RESISTOR: fixed; 35,000 ohms; $\pm 5\%$; 24 watts; wire wound; coated; resistance element $3\frac{3}{16}$ " long x $1\frac{1}{16}$ " diameter; $\frac{1}{2}$ " long x $1\frac{1}{16}$ " diameter; ferrule contact surface ferrule mounting; Navy type; Style D except wire size; Grade 1; Class II.	Oscillator and 1st multiplier screen voltage divider	IRC or equal	Navy Spec. RE-13A-372
R-104	3ZK6610-150	RESISTOR: fixed; 10,000 ohms; $\pm 5\%$; 24 watts; wire wound; coated; resistance element $3\frac{3}{16}$ " long x $1\frac{1}{16}$ " diameter; $\frac{1}{2}$ " long x $1\frac{1}{16}$ " diameter; ferrule contact surface; ferrule mounting; Navy type; Style D; Grade 1; Class II.	Low voltage supply divider	IRC or equal	Navy Spec. RE-13A-372
R-105	3ZK6270-20	RESISTOR: fixed; 2700 ohms; $\pm 5\%$; 80 watts; wire wound; coated; resistance element $8\frac{5}{8}$ " long x $1\frac{1}{16}$ " diameter; ferrule contact surface $\frac{1}{2}$ " long x $1\frac{1}{8}$ " diameter; ferrule mounting; Navy type; Style B; Grade 1; Class II.	Low voltage supply divider	IRC or equal	Navy Spec. RE-13A-372
R-106	3RC40BF101M	RESISTOR: fixed; 100-ohm; $\pm 20\%$; 2-watt; composition; insulated; resistor 1.41" long x .405" diameter; two $1\frac{1}{2}$ " wire leads taken off resistor; one at each end; lead mounting; color coding RMA.	Oscillator parasitic suppressor	RC40BF101M	C75.7-1943
R-107	3ZK6635-18	RESISTOR: fixed; 6000 ohms; $\pm 5\%$; 10 watts; wire wound; coated; resistance element $1\frac{15}{16}$ " long x $\frac{3}{4}$ " diameter; ferrule contact surface $\frac{1}{2}$ " long x $\frac{9}{16}$ " diameter; ferrule mounting; Navy type; Style E; Grade 1; Class II.	Oscillator and 1st multiplier screen	IRC or equal	Navy Spec. RE-13A-372
R-108	3ZK5981-3	RESISTOR: fixed; 0.27 ohms; $\pm 1\%$; 1 watt; wire wound; coated with moisture proofing compound; resistance element 1" long x $\frac{1}{4}$ " diameter (maximum); two 1" strap leads taken off resistor radially; one at each end; lead mounting.	1st multiplier meter shunt	INS type WL	
R-109	3ZK5981-1	RESISTOR: fixed; 0.127 ohms; $\pm 1\%$; 1 watt; wire wound; coated with moisture proofing compound; resistance element 1" long x $\frac{1}{4}$ " diameter (maximum); two 1" strap leads taken off resistor radially; one at each end; lead mounting.	2nd multiplier cathode meter shunt	INS type WL	
R-110	3ZK5984-1	RESISTOR: fixed; 1.9 ohms; $\pm 1\%$; 1 watt; wire wound; coated with moisture proofing compound; resistance element 1" long x $\frac{1}{4}$ " diameter (maximum); two 1" strap leads taken off resistor radially; one at each end; lead mounting.	Power amplifier grid meter shunt	INS type WL	
R-111	3ZK5981-2	RESISTOR: fixed; 0.142 ohms; $\pm 1\%$; 1 watt; wire wound; coated with moisture proofing compound; resistance element 1" long x $\frac{1}{4}$ " diameter (maximum); two 1" strap leads taken off resistor radially; one at each end; lead mounting.	No. 1 power amplifier meter shunt	INS type WL	
R-112		Same as ref R-111.	No. 2 power amplifier meter shunt		
R-113	2ZK6100-115	RESISTOR: fixed; 1000 ohms; $\pm 1\%$; 1 watt; wire wound; no coating; enamelled wire wound on deeply slotted ceramic coil form 1" long x $\frac{1}{2}$ " in diameter; two lugs; one at each end of form for leads; through bolt mounting.	600 volt meter shunt	INS type SL	

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TABLE OF REPLACEABLE PARTS (Cont'd)
Model: Radio Set AN/CRN-10 **Major Assembly: Radio Transmitter T-66/CRN-10**

Reference Symbol	Army Stock Number Navy Stock Number British Ref Number	Name of Part and Description	Function	Mfr. and Desig. or Standard Type	Contr or Govt Dwg or Spec, No.
R-114		RESISTOR: same as ref R-113.	1000 volt meter shunt	INS type SL	
R-115		RESISTOR: same as ref R-113.	Bias voltage meter shunt	INS type SL	
R-116	3ZK6640-41	RESISTOR: fixed; 40,000 ohms; $\pm 1\%$; 1 watt; wire wound; no coating; enameled wire wound on deeply slotted ceramic coil form $1\frac{1}{2}$ " long x $\frac{1}{2}$ " in diameter; two lugs; one at each end of form for leads; through bolt mounting.	Bias voltage voltmeter multiplier	INS type SL	
R-117		RESISTOR: fixed; 15,000 ohms; $\pm 5\%$; 28 watts; wire wound; coated; resistance element $4\frac{1}{8}$ " x $1\frac{1}{16}$ " diameter; ferrule contact surface $\frac{1}{2}$ " long x $1\frac{1}{16}$ " diameter; ferrule mounting; Navy type; Style C; Grade 1; Class II.	Oscillator and 1st multiplier screen voltage divider	IRC or equal	Navy Spec. RE-13A-372
R-118	3RC40BF273K	RESISTOR: fixed; 27,000-ohm; $\pm 10\%$; 2-watt; composition; insulated; body 1.41 " x $.405$ " diameter; 2 wire leads $1\frac{1}{2}$ " long; one lead from each end of resistor; lead mounting; color coding RMA.	1st multiplier grid leak	RC40BF273K	C75.7-1943
R-119		RESISTOR: fixed; 11,000 ohms; $\pm 5\%$; 60 watts; wire wound; coated; resistance element $6\frac{1}{16}$ " long x $1\frac{5}{16}$ " diameter; ferrule contact surface $\frac{1}{2}$ " long x $1\frac{1}{8}$ " diameter. Ferrule mounting; Navy type; Style B; Grade 1; Class II.	Oscillator and 1st multiplier screen voltage divider	IRC or equal	Navy Spec. RE-13A-372
R-120	3ZK6583E5-1	RESISTOR: fixed; 8,350 ohms; $\pm 5\%$; 60 watts; wire wound; coated; resistance element $6\frac{1}{16}$ " long x $1\frac{5}{16}$ " diameter; ferrule contact surface $\frac{1}{2}$ " long x $1\frac{1}{8}$ " diameter; ferrule mounting; Navy type; Style B; Grade 1; Class II.	High voltage bleeder	IRC or equal	Navy Spec. RE-13A-372
R-121		RESISTOR: same as ref R-120.	High voltage bleeder		
R-122	3ZK6066-1	RESISTOR: fixed; 660 ohms; $\pm 5\%$; 10 watts; wire wound; coated; resistance element $1\frac{15}{16}$ " long x $\frac{3}{4}$ " diameter; ferrule contact surface $\frac{1}{2}$ " long x $\frac{5}{16}$ " diameter; ferrule mounting; Navy type; Style E; Grade 1; Class II.	1st multiplier cathode bias	IRC	Navy Spec. RE-13A-372
R-123	3ZK6680-11	RESISTOR: fixed; 80,000 ohms; $\pm 1\%$; 1 watt; wire wound; no coating; enameled wire wound on deeply slotted ceramic coil form $1\frac{1}{2}$ " long x $\frac{1}{2}$ " diameter. Two lugs; one at each end of form for leads; through bolt mounting.	Low voltage voltmeter multiplier	INS Type SL	
R-124		RESISTOR: Same as ref R-123.	Low voltage boltmeter multiplier		

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R-125	3ZK6700-103	RESISTOR: same as ref R-123.	Low voltage voltmeter multiplier	INS Type SL	Navy Spec. RE-13A-372
R-126	3ZK6700-103	RESISTOR: fixed; 100,000 ohms; $\pm 1\%$; 1 watt; wire wound; no coating; enameled wire wound on deeply slotted ceramic coil form 1" long x $\frac{1}{2}$ " diameter; two lugs; one on each end of form for leads; through bolt mounting.	High voltage voltmeter multiplier		
R-127		RESISTOR: same as ref R-126.	High voltage voltmeter multiplier		
R-128		RESISTOR: same as ref R-126.	High voltage voltmeter multiplier		
R-129		RESISTOR: same as ref R-126.	High voltage voltmeter multiplier		
R-130	3ZK6630-63	RESISTOR: fixed; 30,000 ohms; $\pm 5\%$; 10 watts; wire wound; coated; resistance element $1\frac{1}{16}$ " long x $\frac{3}{4}$ " diameter; ferrule contact surface $\frac{1}{2}$ " long x $\frac{9}{16}$ " diameter; ferrule mounting; Navy type; Style E except wire size; Grade 1; Class II.	2nd multiplier grid leak	IRC or equal	
R-131	3ZK6507-3	RESISTOR: fixed; 5700 ohms; $\pm 5\%$; 60 watts; wire wound; coated; resistance element $6\frac{1}{16}$ " long x $1\frac{1}{16}$ " diameter; ferrule contact surface $\frac{1}{2}$ " long x $1\frac{1}{8}$ " diameter; ferrule mounting; Navy type; Style B; Grade 1; Class II.	2nd multiplier screen voltage divider	IRC or equal	Navy Spec. RE-13A-372
R-132	3ZK6640-48	RESISTOR: fixed; 40,000 ohms; $\pm 5\%$; 10 watts; wire wound; coated; resistance element $1\frac{1}{16}$ " long x $\frac{3}{4}$ " diameter; ferrule contact surface $\frac{1}{2}$ " long x $\frac{9}{16}$ " diameter; ferrule mounting; Navy type; Style E except wire size; Grade 1; Class II.	2nd multiplier screen	IRC or equal	Navy Spec. RE-13A-372
R-133	3ZK6560-29	RESISTOR: fixed; 6000-ohm; $\pm 5\%$; 10 watt; wire wound; coated; resistance element $1\frac{1}{16}$ " long x $\frac{3}{4}$ " diameter; ferrule contact surface $\frac{1}{2}$ " long x $\frac{9}{16}$ " long x $\frac{3}{4}$ " diameter; ferrule mounting; Navy type; Style E; Grade 1; Class II.	Power amplifier grid lead	IRC or equal	Navy Spec. RE-13A-372
R-134	3ZK6100-143	RESISTOR: fixed; 1000 ohms; $\pm 5\%$; 24 watts; wire wound; coated; resistance element $3\frac{1}{16}$ " long x $1\frac{1}{16}$ " diameter; ferrule contact surface $\frac{1}{2}$ " long x $\frac{1}{16}$ " diameter; ferrule mounting; Navy type; Style D; Grade 1; Class II.	Bias voltage bleeder	IRC or equal	Navy Spec. RE-13A-372
R-135	3RC30BF103M	RESISTOR: fixed; 10,000 ohms; $\pm 20\%$; 1 watt; composition; insulated resistor; 0.718" long x 0.280" diameter; two $1\frac{1}{2}$ " wire leads; one out each end of the resistor; lead mounting; color coding RMA per AWS C75.7-1943.	Monitor load	RC30BF103M	C75.7-1943
S-101	3ZK9824-31.3	SWITCH: momentary; push button; double pole single throw; normally closed; 12 amperes at 115 volts a-c; $1\frac{3}{4}$ " x $\frac{3}{4}$ " x $1\frac{35}{64}$ " overall; $\frac{15}{32}$ " diameter threaded sleeve mounting; length of threaded sleeve $\frac{15}{32}$ "; screen type terminals on rear of switch; tropicalized.	Overload reset	H & H No. 80630-A	

TABLE OF REPLACEABLE PARTS (Cont'd) Major Assembly: Radio Transmitter T-66/CRN-10

Model: Radio Set AN/CRN-10

Reference Symbol	Army Stock Number Navy Stock Number British Ref Number	Name of Part and Description	Function	Mfr. and Desig. or Standard Type	Contr or Gout Dwg or Spec. No.
S-102	3ZK9903-11	SWITCH: rotary; 2-circuit; 2-section; 9-position with detent action and ceramic insulation; insulated for 2200 v a-c; 60 cycle working voltage. Overall dimensions $3\frac{1}{8}$ " long x 2" diameter; $\frac{3}{8}$ " diameter threaded sleeve mounting; length of threaded sleeve $\frac{3}{8}$ "; shaft length 1"; shaft diameter $\frac{1}{4}$ "; non-shorting; contact lugs around edge of each wafer to operate in temp. range of -55°C to $+71.1^{\circ}\text{C}$ (-67°F to $+163^{\circ}\text{F}$) and withstand 50-hr salt spray test per AN-QQ-S-91.			
S-103	3ZK8760-3	SWITCH: two-contact plug type; single circuit; 10-ampere; 115 volts; 5 ampere; receptacle overall dimension $2\frac{1}{32}$ " x $\frac{9}{16}$ "; switch flush mounting area (receptacle) $1\frac{1}{16}$ " x $\frac{9}{16}$ "; mounting hole centers (receptacle) $2\frac{1}{2}$ "; flush mounting area (plug) $1\frac{25}{32}$ " x $\frac{9}{16}$ "; mounting hole centers (plug) $1\frac{3}{8}$ "; chassis mounting female section, frame-mounting male section.	R-F section interlock switch	NL-201705-1	
S-104		SWITCH: same as ref S-103.	Power supply section interlock		
S-105	3ZK9829-5	SWITCH: thermostatic SPST; single contact; normally closed; 10 amperes at 200 volts a-c; overall dimensions $1\frac{5}{8}$ " x $2\frac{3}{8}$ " x $\frac{7}{8}$ "; flanged rectangular mounting $1\frac{5}{8}$ " x $2\frac{3}{8}$ "; mounting holes $2\frac{1}{16}$ " between centers; thermostat to open on temperature rise at $+85^{\circ}\text{C}$ (185°F); $\pm 5\%$; to close on temperature drop at $+75^{\circ}\text{C}$ (167°F); $\pm 5\%$.	Thermal protection	S No. C-4357-17	Spec. F-34261-1
S-106		SWITCH: toggle; DPDT; 10 amperes at 250 volts a-c; no neutral position; overall dimensions $2\frac{1}{2}$ " x $1\frac{1}{2}$ " x $2\frac{5}{8}$ ". Mounting area $2\frac{1}{2}$ " x $1\frac{1}{2}$ "; mounting centers $3\frac{1}{4}$ ". Contacts; screw type on rear of switch.	Filament switch	H & H No. 80975	Spec. F-34261-1
S-107		SWITCH: same as ref S-106.	Plate switch		
T-101	2ZK9613-50	TRANSFORMER: power; 55 to 65 cycles a-c; 115 volts; two windings; secondary voltage 1560/780 volts at 320 milliamperes rms; .39/.55 KVA; primary resistance 0.53 ohms; secondary resistance 105.6 ohms; all resistance readings taken at ambient temperature of 33°C (91°F); cased; hermetically sealed; overall case dimensions $7\frac{1}{16}$ " x $9\frac{1}{4}$ " x $4\frac{1}{2}$ "; height over terminals $8\frac{1}{16}$ "; flange mounting; mounting holes $8\frac{1}{2}$ " x $3\frac{1}{2}$ " on centers; five bushing type terminals out top of case; voltage insulation; primary; 2500 volts rms to core and case; secondary, 7500 volts rms to core, case and primary; secondary winding tapped to within 2% of electrical center with respect to magnitude; operating temperature range -55°C to 75°C (-67°F to 167°F).	Low voltage supply transformer	F	Spec. F-34198-1 F-33076-1 F-33770-1 Dwg. F-34199-1

T-102	2ZK9611.28	TRANSFORMER: power; 55 to 65 cycles a-c; 115 volts; three windings; voltage secondary No. 1-2.5 volts at 10.0 amperes; voltage dec- ance 5.45 ohms; secondary No. 1 resistance 0.01618 ohms; secondary No. 2 resistance 0.01618 ohms; all resistance readings taken at amb- ient temperature of 31 °C (88 °F); cased; hermetically sealed; overall case dimensions 4 13/16" x 6" x 3 5/8"; height over terminals 6 1/4"; flange mounting; mounting holes 3" x 5 1/2"; six bushing type terminals out top of case. Voltage insulation; primary 2500 volts rms to core and case; secondary 6000 volts to primary, core and case; no winding taps; operating temperature range -55 °C to 75 °C (-67 °F to 167 °F).	Rectifier filament transformer	F	Spec. F-33784-1 F-33076-1 F-33770-1 Dwg. F-33785-1
T-103	2ZK9613.5)	TRANSFORMER: power; 55 to 65 cycles a-c; 115 volts; two windings; secondary voltage 2600/1300 volts at a current of 225 milliamperes rms; primary resistance 0.395 ohms; secondary resistance 220-ohms; all resistance readings taken at ambient temperature of 26 °C (79 °F); cased; hermetically sealed; overall case dimensions 8 5/8" x 9 1/4" x 3 5/8"; height over terminals 10 3/4"; mounting holes 8 1/2" x 3 1/2" on centers; five bushing type terminals out top of case; voltage insula- tion: primary, 2500 volts to core and case; secondary, 12,000 volts to primary, core and case; secondary winding tapped to within 2% of electrical center with respect to magnitude, operating temperature range -55 °C to 75 °C (-67 °F to 167 °F).	High voltage supply transformer	F	Spec. F-34200-1 F-33076-1 F-33770-1 Dwg. F-34201-1
T-104	2ZK9611.30	TRANSFORMER: power; 55 to 65 cycles a-c; 115 volts; three wind- ings; voltage secondary -5.0 volts at 7.5 amperes; voltage secondary No. 2-5.0 volts at 7.5 amperes; 0.075 KVA; primary resistance 3.36 ohms; secondary No. 1 resistance .0335 ohms; secondary No. 2 re- sistance .0335 ohms; all resistance readings taken at ambient temper- ature of 25 °C (77 °F); cased; hermetically sealed; overall case dimen- sions 4 13/16" x 6" x 3 5/8"; height over terminals 6 1/4"; flange mounting; mounting holes 5 1/2" x 3" on centers; eight bushing type terminals out top of case; voltage insulation; primary, 2500 volts to core and case; secondary No. 1, 2500 volts to primary; secondary No. 2, core and case; secondary No. 2, 2500 volts to primary, secondary No. 1; core and case. Secondary winding No. 1 and No. 2 center tapped; center tap capable of carrying a direct current of 300 milliamperes continuously; operating temperature range -55 °C to 75 °C (-67 °F to 167 °F).	Power amplifier filament transformer	F	Spec. F-33086-1 F-33076-1 F-33770-1 Dwg. F-33087-1
T-105	2ZK9611.25	TRANSFORMER: power; 55 to 65 cycles a-c; 115 volts; three wind- ings; secondary No. 1 voltage 6.3 volts at 2.1 amperes; secondary No. 2 voltage 5.0/2.5 volts at 7.5 amperes; 0.050 KVA; primary re- sistance 6.11 ohms; resistance secondary No. 1; 0.0836 ohms; resist- ance secondary No. 2, 0.02425 ohms; all resistance readings taken at ambient temperature of 23 °C (75 °F); cased; hermetically sealed; overall case dimensions 5 3/8" x 5 3/4" x 3 5/16"; height over terminals 5 3/4"; flange mounting; mounting holes 4 1/8" x 2 5/8" on centers. Seven bushing type terminals out top of case; voltage insulation, primary 2500 volts rms to case and core; No. 1 secondary, 2500 volts rms to primary, secondary No. 2; core and case; secondary No. 2 center tapped and capable of carrying a direct current of 300 milliamperes continuously; operating temperature range -55 °C to 75 °C (-67 °F to 167 °F).	Oscillator and multiplier filament transformer	F	Spec. F-33088-1 F-33076-1 F-33770-1 Dwg. F-33089-1

Model: Radio Set AN/CRN-10
TABLE OF REPLACEABLE PARTS (Cont'd)
 Major Assembly: Radio Transmitter T-66/CRN-10

Reference Symbol	Army Stock Number Navy Stock Number British Ref Number	Name of Part and Description	Function	Mfr. and Desig. or Standard Type	Contr & Govt Dwg or Spec. No.
T-106	2ZK9613.49	TRANSFORMER: power; 55 to 65 cycles a-c; 115 volts; three windings; secondary No. 1 voltage; 5.0 volts at 2.0 amperes; secondary No. 2 voltage 275/137.5 volts at 64 milliamperes; 0.030 KVA; primary resistance 9.81 ohms; resistance secondary No. 1, 0.103 ohms; resistance secondary No. 2, 119.1 ohms; all resistance readings taken at 27°C (81°F); cased; hermetically sealed; overall case dimensions 4 $\frac{1}{16}$ " x 2 $\frac{3}{4}$ " x 5 $\frac{3}{8}$ "; height over terminals 5 $\frac{3}{4}$ "; flange mounting; mounting holes 2 $\frac{5}{8}$ " x 4 $\frac{7}{8}$ " on centers; seven bushing type terminals out bottom of case; voltage insulation: primary, 2500 volts rms to core and case; secondary No. 1, 2500 volt rms to secondary No. 2, primary, core and case; secondary No. 2, 2500 volts to secondary No. 1, primary, core and case; secondary No. 2 center tapped within 2% of electrical center with respect to magnitude; operating temperature range -55°C to 75°C (-67°F to 167°F).	Bias supply transformer	F	Spec. F-33782-1 F-33770-1 F-33076-1 Dwg. F-33783-1
V-101		TUBE: JAN-807; (VT-100); Commercial 807.	Radio frequency oscillator	RCA or equal	
V-102		TUBE: JAN-836; (VT-236); Commercial 836.	Low voltage rectifier	RCA or equal	
V-103		TUBE: same as ref V-102.	Low voltage rectifier		
V-104		TUBE: same as ref V-102.	High voltage rectifier		
V-105		TUBE: same as ref V-102.	High voltage rectifier		
V-106		TUBE: same as ref V-101.	1st multiplier		
V-107		TUBE: JAN-4E27; Commercial HK257B.	2nd multiplier	HK	
V-108		TUBE: JAN-5VA4G; (VT-206-A); Commercial 5V4G.	Bias rectifier		
V-109		TUBE: same as ref V-107.	1st power amplifier		
V-110		TUBE: same as ref V-107.	2nd power amplifier		
V-111		TUBE: JAN-6H6; (VT-90); Commercial 6H6.	Monitor tube	RCA	
X-101	2Z8795.2	SOCKET: tube; octal type; steatite; with retainer spring.	Tube mounting	APH SS8M	
X-102	2Z8675.13	SOCKET: tube; five pin; steatite; with retainer spring.	Tube mounting	APH SS6M	

Model: Radio Set AN/CRN-10	Major Assembly: Junction Box			
	Tube mounting	J No. 237	Spec. F-34261-1	
X-103	2ZK8677.18	SOCKET: tube; special 7 prong wafer; silver plated.	Tube mounting	J No. 237
X-104	2Z8799-137	SOCKET: tube; octal type; bakelite; with retainer spring.	Tube mounting	APH S8
X-105	2Z8759.4	SOCKET: tube; four prong bayonet type; silver plated.	Tube mounting	J No. 209B
Y-101		CRYSTAL: quartz; mounted in pressure type assembly; maximum overall dimensions 1.875" x 1.162" x .4375"; frequency 6016.667 kilocycles $\pm .02\%$ at ambient temperature between -55°C (-67°F); and $+90^{\circ}\text{C}$ ($+194^{\circ}\text{F}$).	Frequency control Channel V	F
Y-102		CRYSTAL: quartz; mounted in pressure type assembly; maximum overall dimensions 1.875" x 1.162" x .4375"; frequency 6038.889 kilocycles $\pm .02\%$ at ambient temperature between -55°C (-67°F); and $+90^{\circ}\text{C}$ ($+194^{\circ}\text{F}$).	Frequency control Channel V	F
Y-103		CRYSTAL: quartz; mounted in a pressure type assembly; maximum overall dimensions 1.875" x 1.162" x .4375"; frequency 6061.111 kilocycles $\pm .02\%$ at ambient temperature between -55°C (-67°F); and $+90^{\circ}\text{C}$ ($+194^{\circ}\text{F}$).	Frequency control Channel W	F
Y-104		CRYSTAL: quartz; mounted in a pressure type assembly; maximum overall dimensions 1.875" x 1.162" x .4375"; frequency 6083.333 kilocycles $\pm .02\%$ at ambient temperature between -55°C (-67°F); and $+90^{\circ}\text{C}$ ($+194^{\circ}\text{F}$).	Frequency control Channel X	F
Y-105		CRYSTAL: quartz; mounted in a pressure type assembly; maximum overall dimensions 1.875" x 1.162" x .4375"; frequency 6105.556 kilocycles $\pm .02\%$ at ambient temperature between -55°C (-67°F); and $+90^{\circ}\text{C}$ ($+194^{\circ}\text{F}$).	Frequency control Channel Y	F
Y-106		CRYSTAL: quartz; mounted in a pressure type assembly; frequency 6127.778 kilocycles $\pm .02\%$ at ambient temperature between -55°C (-67°F) and $+90^{\circ}\text{C}$ ($+194^{\circ}\text{F}$).	Frequency control Channel Z	F
Model: Radio Set AN/CRN-10				
201-299 Series	JUNCTION BOX is housed in an aluminum box of $\frac{3}{8}$ " sheet aluminum; overall dimensions $6\frac{3}{8}$ " wide x $10\frac{7}{8}$ " deep x $11\frac{3}{8}$ " high; all controls, indicator lamps and terminals on front panel behind two hinged doors. Junction box is mounted on left side of transmitter cabinet.			
E-201	3G1250-12.6	POST INSULATOR: ceramic, $\frac{1}{2}$ " diameter x $\frac{3}{4}$ " long; tapped at each end 8-32 thread.	AL No. 1402	
E-202	2Z5786.31	KNOB: bakelite, for $\frac{1}{4}$ " shaft; two diametrically opposite holes drilled on underside of skirt; holes tapped No. 4-40 to a depth of $\frac{3}{16}$ " as shown on drawing RA-341-1.	MJ No. 10005	Dwg. RA-341-1

TABLE OF REPLACEABLE PARTS (Cont'd)

Model: Radio Set AN/CRN-10

Major Assembly: Junction Box

Reference Symbol	Army Stock Number Navy Stock Number British Ref Number	Name of Part and Description	Function	Mfr. and Desig. or Standard Type	Contr or Gout Dwg or Spec. No.
E-203	2Z9408.45	TERMINAL BLOCKS: 8 point; molded bakelite; barrier type; sixteen (16) 8-32 thread x $\frac{5}{16}$ " terminal screws; overall dimensions $6\frac{1}{8}$ " long x $1\frac{5}{16}$ " wide x $\frac{5}{8}$ " high.		JO 8-142	
F-201		FUSE: fusetron; 30 ampere; 250 volt; ferrule type; overall length 2"; diameter of tube $\frac{1}{2}$ "; diameter over ferrule $\frac{1}{16}$ "; blows 50% overload in 300 seconds; 100% overload in 110 seconds; 500% overload in 11 seconds.	Protection a-c line	BUSS FRN-30	
F-202		FUSE: same as ref F-201.			
F-203		FUSE: fusetron; 0.8 ampere; 250 volts; ferrule type; overall length 2"; diameter of tube $\frac{1}{2}$ "; diameter over ferrules $\frac{9}{16}$ "; blows 50% overload in 230 seconds; 100% overload in 75 seconds; 500% overload in 13 seconds.	Obstacle light protection	BUSS FRN 8/10	
F-204		FUSE: fusetron; 6.25 amperes; 250 volts; ferrule type; overall length diameter of tube $\frac{1}{2}$ "; diameter over ferrules $\frac{9}{16}$ "; blows 50% overload in 230 seconds; 100% overload in 80 seconds; 500% overload in 13 seconds.	Obstacle light protection	BUSS FRN-6 $\frac{1}{4}$	
F-205		FUSE: same as F-203.	Obstacle light protection		F-12058-3-43
H-201	36K1838-15.5	WASHER: insulating, bakelite any color; Grade XP; No. 15 (.180) ID; $\frac{3}{8}$ " OD; $\frac{1}{4}$ " thick.	Insulator		RA-4463-1
H-202	6L31214-30	STUD: brass rod $\frac{1}{16}$ " diameter cadmium plated; $1\frac{1}{2}$ " overall length; portion of rod turned down and threaded No. 10-32; length of threaded section $1\frac{3}{16}$ " and $\frac{3}{8}$ ".			F-32666-12-5
H-203	6L4770-14.10K	SCREW: captive; free turning brass; $\frac{7}{8}$ " long; head $\frac{1}{16}$ " diameter; x $\frac{3}{16}$ " knurled; shank .0150" dia. x $\frac{1}{2}$ " long unthreaded; threaded section $\frac{3}{16}$ " long; x No. 10-32 thread; finish dull white nickel plate.			F-32667-12-3
H-204	2C6900-66/2	INSERT: chamet brass rod $\frac{3}{8}$ " diameter 0.339" long; dull white nickel plate finish; tapped section $\frac{1}{8}$ " long; tapped No.10-32; shoulder 0.250"; sleeve 0.089"; untapped section 0.218" dia. x 0.214" long.			
H-205	2ZK857-8	RING: retainer, $\frac{1}{2}$ " OD; gap $\frac{1}{4}$ "; No. 21 (0.028) spring temper brass wire.			F-32666-1-2
H-206	6L4770-12-1.10K	SCREW: captive; free turning brass rod; $\frac{5}{16}$ " long; head $\frac{1}{16}$ " diameter x $\frac{3}{16}$ " knurled; shank .150" diameter x $\frac{1}{8}$ " long unthreaded; threaded section $\frac{3}{16}$ " long x 10-32 thread finish dull white nickel plate.			F-32666-12-59

I-201		PILOT LIGHT ASSEMBLY: consisting of:	Filament "ON" indicator		
I-201A		SOCKET ASSEMBLY: lamp, shell zinc alloy; cronak finish panel ring; double contact; spring tension bayonet socket for S-6 bulb; retracting ferrule of threaded bakelite; shell 1 1/4" OD threaded for panel mounting; length of threaded shell 1 3/8". Panel ring 1 1/2" OD extended depth 1 5/8" overall; fungus treatment.	KL 660 Bulls-Eye Type PUL		
I-201B		LENS: internally frosted amber glass lens mounted in ring locking mount.	KL 660 Bulls-Eye		
I-201C		LAMP: double contact bayonet base; 120 volt; 6 watt clear; S-6 Bulb.	GE S-6		
J-201	6Z7808	RECEPTACLE: flush, twistlock; 20 amperes at 250 volts; overall dimensions 3 5/8" x 1 1/16" x 1 1/16"; porcelain body; strap mounted; 3 3/8" between mounting centers; mounting area 3 5/8" x 1 1/16".	HUBB No. 7210		
J-202	2Z8671.47	RECEPTACLE: weatherproof; 15 amperes at 110 volts; 10 amperes at 250 volts; non-reflecting satin finish aluminum shell; insert of high dielectric molded bakelite; phosphor bronze current carrying members; overall dimensions 1 5/8" x 1 5/8" x 9/16"; threaded for 1 3/8"-18 cap; mounting area 1 5/8" x 1 5/8"; four mounting holes on 1 1/4" centers; complete with cap and chain.	APH 97-4085		
N-201	#	NAME PLATE: (Power On); dimensions 1 1/16" x 3/8" x 1/16"; "Farlite" thermo setting plastic.		Dwg. F-41374-3-23	
N-202	#	NAME PLATE: (Battery); dimensions 1 1/8" x 5/16" x 1/16"; "Farlite" thermo setting plastic.		Dwg. F-41374-3-22	
N-203	#	NAME PLATE: (Off); dimensions 1 1/8" x 3/8" x 1/16"; "Farlite" thermo setting plastic.		Dwg. F-41374-3-11	
N-204	#	NAME PLATE (115 V.A.C.); dimensions 1 1/8" x 5/16" x 1/16"; "Farlite" thermo setting plastic.		Dwg. F-41374-3-13	
N-205	#	NAME PLATE: (Runway Source); dimensions 1 1/16" x 5/16" x 1/16"; "Farlite" thermo setting plastic.		Dwg. F-41374-3-2	
N-206	#	NAME PLATE: (External); dimensions 1 1/16" x 3/8" x 1/16"; "Farlite" thermo setting plastic.		Dwg. F-41374-3-5	
N-207	#	NAME PLATE: (Generator); dimensions 1 1/16" x 3/8" x 1/16"; "Farlite"; thermo setting plastic.		Dwg. F-41374-3-6	
N-208	#	NAME PLATE: (Off); dimensions 3/4" x 3/8" x 1/16"; "Farlite" thermo setting plastic.		F-41374-3-18	
N-209	#	NAME PLATE: (Power Supply); dimensions 1 1/16" x 9/16" x 1/16" "Farlite" thermo setting plastic.		Dwg. F-41374-3-14	

TABLE OF REPLACEABLE PARTS (Cont'd)

Model: Radio Set AN/CRN-10

Major Assembly: Junction Box

Reference Symbol	Army Stock Number Navy Stock Number British Ref Number	Name of Part and Description	Function	Mfr. and Desig. or Standard Type	Contr or Govt Dwg or Spec. No.
O-201	6Z3452-2	PLUG COVER: Sealtite Rubber closure plug with chain; twistlock; chain finished Roxalin No. 202537; Signal Corps olive drab.		HUBB No. 7532	Dwg. - RA-4470-1 Spec. NL-1173-1-1
O-202	2Z2636-3	CLAMP: cable; die cast aluminum fits Amphenol No. 20 and No. 22 shell; fits $\frac{1}{8}$ " OD cable; overall dimensions $1\frac{3}{8}$ " diameter x $1\frac{1}{16}$ " long; threaded $1\frac{1}{16}$ "-18"; uses two 8-32 x $\frac{1}{8}$ " machine screws. Finish fine grain metallic sand blast satin.		APH AN-3057-12	
O-203	2Z2636-4	CLAMP: cable; die cast aluminum fits Amphenol No. 12 and No. 128 shell; fits $\frac{3}{8}$ " OD cable; overall dimensions $\frac{25}{32}$ " diameter x 1" long; threaded $\frac{5}{8}$ "-24; uses two 5-40 x $\frac{1}{2}$ " machine screws; finish fine grain metallic sand blast satin.		APH AN-3057-4	
O-204	6Z3452-4	COVER ASSEMBLY: rubber for No. 7102 plug; consisting of a plug hood and a contact cover; overall dimensions 3" long x $2\frac{1}{4}$ " outside diameter; both sections held together x $5\frac{1}{2}$ " chain.		HUBB FT-12067	Dwg. RA-4774-2-1
O-205	2C6900-66/G2	GASKET: $\frac{1}{8}$ " soft gum rubber 20-25 Duron; rectangular shaped; outside dimensions $7\frac{3}{8}$ " x $6\frac{1}{4}$ "; inside dimensions $6\frac{5}{8}$ " x $5\frac{1}{2}$ "; three holes $\frac{3}{4}$ " diameter in each side.			Dwg. RA-4774-2-2
O-206	2C6900-66/G4	GASKET: $\frac{1}{8}$ " soft gum rubber 20-25 Duron; rectangular shaped; outside dimensions $7\frac{13}{16}$ " x $3\frac{13}{16}$ "; inside dimensions $2\frac{15}{16}$ " x $6\frac{15}{16}$ "; two holes $\frac{13}{64}$ " diameter in each long side.			Dwg. RA-4472-1
O-207	2C6900-66/G1	GASKET: $\frac{1}{16}$ " "Fairprene" No. 5565; $1\frac{1}{2}$ " OD x $1\frac{1}{16}$ " ID, three No. 29 (0.136) drill holes on 0.625" radius speed at 120° intervals around gasket.			Dwg. RA-4464-2-1
O-208	2C6900-66/G5	GASKET: soft gum rubber any color; 25 Durometer max.; overall $5\frac{1}{16}$ " x $5\frac{11}{16}$ " outside x $\frac{5}{16}$ " thick; inside $4\frac{1}{16}$ " x $5\frac{1}{16}$ "; gasket edges rolled on $\frac{1}{16}$ " radius; one flat side only.			Dwg. RA-3909-1
O-209	2C6900-66/G3	GASKET: $\frac{1}{16}$ " thick soft rubber; square shaped; outside dimension $1\frac{5}{8}$ " x $1\frac{5}{8}$ "; inside diameter $1\frac{11}{16}$ "; four mounting holes on $1\frac{1}{4}$ " centers.			
O-210	2Z1612.12	DUST CAP: die cast aluminum with 5" long chain; fits No. 128 12S connection; overall $\frac{7}{8}$ " diameter x $\frac{9}{16}$ " long; threaded $\frac{3}{4}$ "-20; finish fine grain metallic sand blast satin; non-reflecting.		APH 9760-12P	
O-211	2Z1612.9	DUST CAP: die cast aluminum with 5" long chain; fits No. 22 connector; overall $1\frac{1}{2}$ " diameter x $\frac{9}{16}$ " long; threaded $1\frac{3}{8}$ "-18; finish fine grain metallic sand blast satin; non-reflecting.		APH 9760-22P	

O-212	2Z1612.13	DUST CAP: die cast aluminum with 5" long chain; fits No. 22 connector; overall 1 5/8" diameter x 9/16" long; threaded 1 3/8"-18; finish fine grain metallic sand blast satin; non-reflecting.	APH 9760-22	Dwg. RA-4820-1
O-213	2C6900-66/G5	GASKET: soft gum rubber 20-25 Durometer rectangular shaped; overall dimensions 5/16" x 1/4" x 5 11/16".		
P-201	2Z8675.37	PLUG: die cast aluminum shell; overall 2 3/4" x 1 3/4" x 1 19/32" diameter; right angle shell; threaded 1 3/16"-18; coupling ring 1 3/8"-18 threads; contacts 4 No. 12 and 1 No. 16; contact spacing 1/8". Shell finish fine grain metallic sand blast satin; coupling ring bright finish.	APH AN3108-22-13S	
P-202	2Z8672.59	PLUG: die cast aluminum shell; overall 2 3/4" x 1 19/32" diameter; right angle shell; threaded 1 3/16"-18; coupling ring 1 3/8"-18 threads; contacts 2 No. 12 spaced 1/8"; shell finish fine grain metallic sand blast satin; coupling ring bright finish.	APH AN3108-22-8S	
P-203	2Z7226-9175	PLUG: die cast aluminum shell; overall 1 23/32" x 1 1/4" x 1 5/16" diameter; right angle shell; threaded 5/8"-24; contacts 2 No. 20 spaced 1/16". Shell finish fine grain metallic sand blast satin; coupling ring bright finish.	APH AN3108-12S-3S	
P-204	2Z3022-53	PLUG: twist lock; steel shell cadmium plated; overall 1 5/8" diameter x 2" over cable clamp; insert bakelite; contact capacity 20 amperes at 250 volts; 0.296" to 0.562" cord hole; 2-piece clamp uses 2 No. 6-32 x 1/2" machine screws; contacts of 1/16" brass.	HUBB No. 9103	
R-201		RESISTOR: fixed; 30-ohm; $\pm 10\%$; tolerance, 20 watt; wire wound; coated; resistance element 1 15/16" long x 3/4" diameter; ferrule contact surface 1/2" long x 9/16" diameter; ferrule mounting; Navy Type; Style E; Grade I; Class II.	S5	Navy Spec. RE-13A-372
S-201		SWITCH: toggle; DPDT; 30 amperes at 120 volts a-c; center "off" position; overall dimensions 3 1/8" x 3 3/4" x 1 13/16"; mounting area 1 13/16" x 3 3/4" mounting centers; 1 3/4" screw type terminals on rear of switch.	H&H No. 80988	
S-202		SWITCH: rotary; DP triple throw; 4-position; 10-ampere; 120-volt; bakelite insulation; overall dimensions 2 15/16" long x 2 1/4" x 2 1/4"; mounting centers 1.656" x 1.656"; length of shaft 1 5/16"; shaft diameter 1/4"; 1/2" deep x 1/16" long, flat on shaft; arranged so that switch cannot be rotated between circuit No. 1 (12V.) and circuit No. 3 (115 V.) (circuit diagram No. 22) until manual stop has been depressed.	BA Catalog 1954 (modified) Switch Type 10-PVV-11-3 (modified)	Dwg. F-41021-2 AN-QQ-S-91

Model: Radio Set AN/CRN-10

Major Assembly: Course Monitor (Fixed) TS-180/CRN-10

301-399 Series 3F4325-180
COURSE MONITOR: TS-180/CRN-10; (FIXED) with the addition thereto of 1 complete set of tubes GFE; course monitor to be housed in a metal cabinet approximately 10 7/8" wide x 9 3/8" deep x 19 15/16" high (over stack); with all tuning controls and switches on the front panel.

TABLE OF REPLACEABLE PARTS (Cont'd)

Model: Radio Set AN/CRN-10

Major Assembly: Course Monitor (Fixed) TS-180/CRN-10

Reference Symbol	Army Stock Number Navy Stock Number British Ref Number	Name of Part and Description	Function	Mfr. and Desig. or Standard Type		Contr or Govt Dwg or Spec. No.
AS-301	2AK294-2	ANTENNA: 3 section extension whip type; maximum diameter $\frac{5}{16}$ " ; length when collapsed $14\frac{3}{4}$ " ; length full extended approximately 36" ; satin finish nickel plate.	Antenna	PHIL No. 336	Dwg. F-38598-2	
C-301	3DK9030V-5	CAPACITOR: variable; air dielectric; maximum capacity 31.0 mmf; minimum capacity 3.6 mmf; single section 7 plates; 3 fixed and 4 rotor; plate material—aluminum; plate spacing 0.050" ; 1500 volts rms 60 cycle breakdown test; ceramic insulation; no trimmers; plates silver plated 0.0002" ; all silver plated areas to be coated with a lacquer meeting Signal Corps Spec. SC-B-486-G; rotor shaft solid; no insulation; overall dimensions $1\frac{13}{16}$ " x $1\frac{13}{16}$ " x $3\frac{7}{16}$ " ; mounting area $1\frac{13}{16}$ " x $1\frac{13}{16}$ " ; $\frac{1}{4}$ " shaft $1\frac{13}{16}$ " beyond bushing; two $\frac{1}{16}$ " stator connection lugs from side of condenser. Rotor connection tab bent over parallel to condenser axis; $\frac{1}{2}$ " long flat on shaft.	Detector tuning	H Type HFB-30	Dwg. F-39536-2	
C-302	3K4527111	CAPACITOR: fixed; mica; 270 microfarads; $\pm 10\%$; 2500 volts DCW; low-loss phenolic case maximum; case dimensions $1\frac{1}{8}$ " wide x $1\frac{1}{8}$ " long x $2\frac{3}{4}$ " deep; mounting holes on $1/312$ " centers; lug type terminals out ends of case.	Grid coupling	CM45A271K	Spec. F-34263-1	
C-303		CAPACITOR: same as ref C-302.	Plate by-pass			
C-304		CAPACITOR: fixed; paper dielectric; castor oil impregnated; 2.0 mf; $\pm 10\%$; 600 vdcw; 1200 volts d-c test; steel case bright tin dipped; case dimensions $1\frac{1}{8}$ " high x 2" wide x 2" deep; mounting area $2\frac{13}{16}$ " x 2" ; mounting tabs out each side of case; mounting holes $2\frac{3}{8}$ " on centers; lug type terminals out front of case, temperature range of -55°C to 75°C (-67°F to 167°F).	Filter	SS 2537-6	Army Spec. 71-516	
E-301	3G1300-37	POST INSULATOR ASSEMBLY: ceramic; $\frac{1}{2}$ " diameter x 2" long; tapped at each end 8-32 thread; complete with brass studs; washers and hex nuts.	Spacing insulator	AL No. 1003	Dwg. F-8263-3-14 F-12058-3-58	
E-302	3G1250-8.5	POST INSULATOR; ceramic; $\frac{1}{2}$ " diameter x $\frac{1}{2}$ " long; tapped at each end 6-32 thread.	Spacing insulator	ISO No. 397L-1/2		
H-301	6LK1838-1	WASHER: insulating; bakelite Grade XP any color; outside diameter $\frac{7}{16}$ " ; inside diameter No. 26 (0.147).	Insulator		Dwg. F-12058-3-90	
J-301	2ZK8677.17	RECEPTACLE: die cast aluminum shell; overall dimensions $1\frac{3}{8}$ " x $1\frac{3}{8}$ " x $1\frac{11}{16}$ " (over shell); four (4) mounting holes on $1\frac{1}{16}$ " x $1\frac{1}{16}$ " x $1\frac{1}{16}$ " centers; female bakelite insert; contacts; 5 No. 16 and 2 No. 12; contact spacing $\frac{1}{2}$ " ; shell finish fine grain metallic sand blast satin; threaded section $2\frac{1}{2}$ " long; $1\frac{1}{8}$ "-18 thread.	Main connector	APH AN-3102-18-98	Spec. AN-W-C-59	

RESTRICTED

Revised 20 October 1945

RESTRICTED
AN 16-30CRN10-3

L-301	3CK301-3	COIL: antenna pickup; single turn "U" shaped link of $\frac{3}{16}$ " OD No. 20 (.035") thick wall seamless copper tubing soft tempered; coil bent into "L" shape of dimensions $1\frac{3}{4}$ " x $\frac{1}{16}$ " x $\frac{1}{2}$ " inside radius; open ends of coil passed through a $\frac{1}{16}$ " x $\frac{5}{8}$ " x $3\frac{3}{4}$ " copper strip for a distance of $\frac{1}{4}$ " and silver soldered in position; mounting area of assembly $\frac{5}{8}$ " x $3\frac{5}{8}$ "; mounting holes on $3\frac{1}{8}$ " centers along strip center line; entire assembly silver plated 0.0002 to 0.0005" and sprayed with clear lacquer; inductance 0.031 microhenries; resonant frequency above 75 megacycles; current rating 21 amperes.	Antenna coupling	F	Dwg. F-35957-1
L-302	3CK372-8	COIL: radio frequency; tank single turn "U" shaped link of $\frac{3}{8}$ " OD No. 20 (.035") stubs gauge wall thickness soft seamless copper tubing; inside radius of "U" $\frac{1}{16}$ "; open ends of tube flattened in plane parallel to flat plane of the coil and drilled for No. 13 (0.185") drill; overall dimensions $2\frac{1}{8}$ " long x $1\frac{5}{8}$ " wide x $\frac{3}{8}$ " thick; entire coil silver plated 0.0002" thick (min.) and coated with clear lacquer; inductance 0.0037" microhenries; resonant frequency above 75 megacycles; current rating 46 amperes.	Detector tuning	F	Dwg. RA-4295-1 RA-4295-1
L-303		COIL: choke; radio frequency; 55 turns No. 27 AWG wire close wound on $\frac{1}{4}$ " diameter x $1\frac{1}{4}$ " long; ceramic coil form; $1\frac{1}{2}$ " wire leads taken from $\frac{5}{16}$ " metal cap on each end of coil form; resonant frequency above 75 megacycles; inductance 3.9 microhenries; current rating 0.20 amperes.	Plate filter	CC CI-13	
M-301	3FK871E5-1	METER: d-c microammeter; scale 150-0-150 microamperes; flush panel mounting; black bakelite case; body diameter $2\frac{3}{4}$ "; flange diameter $3\frac{1}{2}$ "; not more than 10% overshoot on ends of scale; calibrated 150-0-150 in steps of 5 microamperes; resistance of meter 400 ohms; $\pm 20\%$ moisture and fungus resistance treatment, to work over temp. range of -55°C to $+75^{\circ}\text{C}$ (-67°F to $+167^{\circ}\text{F}$); calibrate to mount in $\frac{1}{8}$ " aluminum panel max. depth behind flange, including terminal studs, $1\frac{7}{8}$ ".	Course indicator	WI Model 301	In accordance with AWS C39.2-1944 where applicable
N-301	#	NAME PLATE (Front): No. 20 (.032) GA 2S $\frac{1}{2}$ H Aluminum; dimensions $2\frac{1}{16}$ " x $\frac{3}{8}$ " x $\frac{1}{32}$ ".	Identify switch		Dwg RA-5466-1-4
N-302	#	NAME PLATE (Back): No. 20 (.032) GA 2S $\frac{1}{2}$ H Aluminum; dimensions $2\frac{1}{16}$ " x $\frac{3}{8}$ " x $\frac{1}{32}$ ".	Identify switch		Dwg RA-5466-1-5
N-303	#	NAME PLATE (CORD CX-244/CRN-10): No. 20 GA 2S $\frac{1}{2}$ H Aluminum; dimensions $2\frac{1}{8}$ " x $\frac{3}{8}$ " x $\frac{1}{32}$ ".	Identify position		Dwg. RA-5466-1-3
N-304	#	NAME PLATE (Detector Tuning): "Farlite" thermo setting plastic; dimensions $2\frac{3}{16}$ " x $\frac{1}{16}$ " x $\frac{1}{16}$ ".	Identify dial		Dwg. F-38089-3-16
N-305	#	NAME PLATE (Course): "Farlite" thermo setting plastic; dimensions $\frac{5}{16}$ " x $1\frac{1}{16}$ " x $\frac{1}{16}$ ".	Identify meter		Dwg. F-39353-3-3
N-306	#	NAME PLATE (Tuning): "Farlite" thermo setting plastic; dimensions $1\frac{3}{16}$ " x $\frac{1}{16}$ " x $\frac{1}{32}$ ".	Identify dial		Dwg. RA-4520-1

TABLE OF REPLACEABLE PARTS (Cont'd)

Model: Radio Set AN/CRN-10

Major Assembly: Course Monitor (Fixed) TS-180/CRN-10

Reference Symbol	Army Stock Number Navy Stock Number British Ref Number	Name of Part and Description	Function	Mfr. and Desig. or Standard Type	Contr or Govt Dwg or Spec. No.
N-307	#	NAME PLATE (Name plate): No. 20 (.032) GA 2S 1/2H Sheet Aluminum; dimensions 3 1/16" x 1 3/16" x 1/16".	Identify apparatus		Dwg. RA-4720-3-2
O-301	2ZK3352-18	DUST CAP AND CHAIN: die cast aluminum shell; overall dimensions 1 1/4" diameter x 9/16"; internal threads 1 1/8"-18; fits No. 18 connector; finish fine grain metallic sand blast satin; shoulder type rivet for chain connection; complete with rubber gasket.	Receptacle protection	APH 9760-18	
O-302	6R55231	WRENCH: Fluted socket set screw wrench; "Rustproof."		Bristo No. 8	
O-303	2ZK2636-2	CABLE CLAMP: die cast aluminum shell; overall dimensions; 1 3/16" diameter x 1 1/8" long; threaded 1-20; fits No. 18 shell; maximum cable OD 1 1/16"; finish fine grain metallic sand blast satin.	Clamp cable to connector	APH AN3057-10	
O-304	3F4325-180/G1	GASKET: pure gum stock (any color) molded rubber 20-25 Duro; overall dimensions 3 3/4" long x 3/8" wide x 1/4" thick; notched per drawing.			Dwg. RA-4169-1
O-305	3F4325-180/B1	ANTENNA SUPPORT ASSEMBLY: overall dimensions 10" high x 2 3/4" wide x 2 3/4" deep; assembly consists of a 2" x 2" x 9" stack of No. 14 (.064") B & S gauge half hard aluminum; a 2 3/4" x 2 3/4" x 1/8" half hard aluminum shoulder is welded to each end of stack for support purposes; top assembly consists of two slotted and drilled pieces of Polystyrene; a transmission line of silver plated copper tubing is supported within the stack; one end of the lines bend horizontally outward at the Polystyrene head, opposite legs bend outward at a 180° angle from the other; the top end of each line terminates in a knurled clutch which supports the antenna; the stack flanges and screw heads are finished lusterless olive drab.	Antenna support		Dwg. RA-4416-3 NL-1173-1-1
O-306	2ZK3718-14	DIAL ASSEMBLY: consists of an etched dial plate, of No. 20 gauge (.032") half hard brass sheet, 1 3/4" diameter; dial plate engraved 0 to 10 inclusive over 180° arc of the dial; markings oxidized black; background chrome plate satin finish; black phenolic dial knob attached to plate by 3-48" x 1/4" long flat head brass machine screws; knob set screw 8-32" x 1/4" long Bristol fluted socket cap point set screw.	Control dial	(Knob) MJ No. 10005	Dwg. F-36730-1-4
O-307	3F4325-180/D1	MOUNTING RING: 4 5/16" diameter free cutting brass rod x 7/16" thick; 2 1/2" diameter hole axially located; six No. 2 (0.221") drill holes on 3.687" diameter spaced at 60 degree intervals; undercut and threaded per drawing.		F	Dwg. RA-4408-1

P-301	2ZK7117:13	PLUG: die cast aluminum shell; overall dimensions $1\frac{5}{16}$ " diameter x 2" long; bakelite insert; male contacts; 5 No. 16 and 2 No. 12; contact spacing $\frac{1}{16}$ "; threaded 1"-20; shell finish fine grain metallic sand blast satin.	Main connector	APH AN3106-18-9P	Spec. AN-W-C-591
R-301	3K40BF105M	RESISTOR: fixed; 1 megohm; $\pm 20\%$; 2 watt; composition; insulated; body 1.41" long x 0.405" diameter; 2 wire leads $1\frac{1}{2}$ " long, one lead from each end of resistor; lead mounting; RMA color coding.	Grid lead	RC40BF105M	C75.7-1944
R-302	3RC40BF682K	RESISTOR: fixed; 6800-ohm 10% ; 2-watt; composition; completely encased in molded bakelite; body- $1\frac{3}{4}$ " long x $\frac{5}{16}$ " diameter; 2 wire leads $1\frac{1}{2}$ " long; one lead from each of resistor; lead mounting; RMA color coding.	Multiplier	RC40BF682K	
S-301	3Z9824-253	SWITCH: push button; SPDT; non-locking; no rated current carrying capacity; insulation voltage 1000 volts d-c test; overall dimensions $2\frac{1}{8}$ " x $1\frac{11}{16}$ " x $\frac{3}{4}$ "; mounting area $\frac{3}{4}$ " x $1\frac{11}{16}$ " bushing mounted; $\frac{3}{8}$ "-32 thread bushing $\frac{3}{8}$ " long; lug type terminals at rear of switch.	Detector tuning	MAL No. 2003	
T-301	2ZK9637.6	TRANSFORMER: audio-frequency; output; matching; 60 to 250 cycles; two windings; no taps; impedance ratio; (pri.) 600 ohms; (sec.) 10,000 ohms; vacuum wax-impregnated; designed to carry no d-c unbalance in coils; electrostatic shielded; cased; sheet steel case hermetically sealed and finished in black Duco; overall case dimensions $3\frac{1}{2}$ " high x $2\frac{3}{4}$ " wide x $3\frac{3}{4}$ " long; mounting holes on $3\frac{1}{4}$ " x $2\frac{3}{16}$ " centers; four stud-bushing type terminals out bottom of case; height over bushings $4\frac{1}{2}$ "; normal input level +10db; insertion loss not more than 1db, temperature range -55°C to $+71.1^{\circ}\text{C}$ (-67°F to 163°F).	Output coupling	F	Spec. F-34936-1 F-33076-1 Dwg. F-34937-1
V-301		TUBE: JAN-9002 (VT-202) Commercial 9002.	Detector	RCA	
X-301	2Z8657-3	TUBE SOCKET: miniature 7 pin mica filled phenolic; overall dimensions $2\frac{3}{8}$ " diameter x $1\frac{11}{16}$ " overall.	Tube socket	APH 78-7PTM	

Model: Radio Set AN/CRN-10 **Major Assembly: Indicator ID-70/CRN-10 or ID-70A/CRN-10**

401-499 Series 225395-70 INDICATOR ID-70/CRN-10: with the addition thereto of one complete set of tubes; indicator box to be housed in a $\frac{3}{8}$ " thick aluminum cabinet $19\frac{1}{16}$ " wide x $12\frac{3}{8}$ " deep x $12\frac{13}{16}$ " high; shock mounted by five No. 12 Lord mounts which in turn are bolted to a $\frac{1}{8}$ " thick x $12\frac{1}{2}$ " x $20\frac{1}{4}$ " aluminum plate; cabinet has all tuning controls and switches mounted on front panel and alarm bell mounted on rear of cabinet.

OR

Model: Radio Set AN/CRN-10 **TABLE OF REPLACEABLE PARTS (Cont'd)** **Major Assembly: Indicator ID-70/CRN-10 or ID-70A/CRN-10**

Reference Symbol	Army Stock Number Navy Stock Number British Ref Number	Name of Part and Description	Function	Mfr. and Desig. or Standard Type	Contr or Govt Dwg or Spec. No.
INDICATOR ID-70A/CRN-10: with the addition thereto of one complete set of tubes GFE; indicator box to be housed in a $\frac{3}{8}$ " thick aluminum cabinet $18\frac{9}{16}$ " wide x $12\frac{3}{8}$ " deep x $12\frac{13}{16}$ " high; shock mounted by five No. 12 Lord mounts which in turn are bolted to a $\frac{1}{8}$ " thick x $12\frac{1}{2}$ " x $20\frac{1}{8}$ " aluminum plate; cabinet has all tuning controls and switches mounted on front panel and alarm bell mounted on rear of cabinet.					
C-401		CAPACITOR: fixed paper dielectric; Hallowax 1001 impregnated; 5mf; $\pm 10\%$; 50 vdcw; 100 volts d-c test; steel case finished in corrosion resisting gray paint; case dimensions $2\frac{3}{4}$ " high x $1\frac{3}{4}$ " wide x $1\frac{1}{2}$ " deep; height over terminals $3\frac{1}{2}$ "; mounted by detachable mounting strap; mounting area $1\frac{1}{8}$ " x $2\frac{15}{16}$ "; mounting holes $2\frac{15}{16}$ " on centers, stud-bushing type out top of case; temp. range -55°C to 75°C (-67° to 167°F).	Alarm time constant	SS No. 24069	Army Spec. 71-516
C-402	3DB1.6100K	CAPACITOR: fixed paper dielectric; castor oil impregnated; 1.0 mf; $\pm 10\%$; 600 vdcw; 1200 volts d-c test; steel case finished in corrosion resisting gray paint; case dimensions $1\frac{3}{16}$ " high x $2\frac{1}{2}$ " wide x $1\frac{11}{16}$ " deep; mounting tabs out each side of case; mounting area $2\frac{3}{4}$ " x $2\frac{3}{4}$ "; lug type terminals out front of case; temp. range -55°C to 75°C (-67°F to 167°F).	Relay filter	SS No. 2537-5	Army Spec. 71-516
C-403	3DKB2-22	CAPACITOR: fixed paper dielectric, oil impregnated; 2.0 mf at maximum capacity variation of 5% over the temperature range of -20°C (-4°F) to $+60^{\circ}\text{C}$ (140°F); 600 vdcw; 1200 volts d-c test steel case finished hot-tinned coated; case dimensions $1\frac{1}{8}$ " high x $2\frac{1}{2}$ " long x $2\frac{1}{2}$ " wide; mounting tabs out each side of case; mounting area $2\frac{1}{2}$ " x $2\frac{15}{16}$ "; lug type terminals out front of case.	Relay filter	ICC 6BA200	Army Spec. 71-516
C-404		CAPACITOR: same as ref C-403.	Bias supply filter		
C-405†		CAPACITOR: fixed; mica; 250 mmf; $\pm 10\%$; 600 vdcw; 1200 volts d-c test; low loss bakelite cased; case dimensions; $1\frac{1}{8}$ " wide x $1\frac{5}{8}$ " long x $\frac{5}{16}$ " deep; mounting holes on $1\frac{1}{4}$ " centers; lug type terminals out ends of case.	Grid r-f bypass	SS No. 2812-4	Spec. F-34263-1
C-405†		CAPACITOR: fixed; mica; 270 micromicrofarads; $\pm 10\%$; 2500 v d-c working; low-loss phenolic cased; case dimensions; $1\frac{1}{8}$ " wide x $1\frac{5}{8}$ " long x $\frac{3}{16}$ " deep; mounting holes on 1.312" centers; lug type terminals out ends of case.	Grid r-f bypass	CM45A271K	C75.3-1944
C-406		CAPACITOR: same as C-401.	Alarm Time constant		

† Used with Indicator ID-70/CRN-10 only. ‡ Used with Indicator ID-70A/CRN-10 only.

C-407	CAPACITOR: same as C-405.	Grid r-f bypass			
C-408†	CAPACITOR: fixed paper Dykanol "A" (chlorinated Diphenyl) impregnated; 500,000 mmf; $\pm 10\%$; 600 vdcw; 1200 volts d-c test; lead plated steel container aluminum painted; case dimensions $\frac{7}{8}$ " high x $1\frac{13}{16}$ " wide x 1" deep; mounting area $2\frac{1}{2}$ " x 1" mounting tabs out each side of case; mounting holes $2\frac{1}{8}$ " between centers; lug type terminals out front of case.	Output coupling	CD DY-6050	Spec. F-24273-1	
C-409†	CAPACITOR: same as ref C-401.	Filter			
C-410	CAPACITOR: fixed paper Dykanol "A" (chlorinated Diphenyl) impregnated; 100,000 mmf; $\pm 10\%$; 600 vdcw; 1200 volts d-c test; lead plated steel container aluminum painted; case dimensions $\frac{3}{4}$ " high x $1\frac{13}{16}$ " wide x 1" deep; mounting area $2\frac{1}{2}$ " x 1" mounting tabs out each side of case; mounting holes $2\frac{1}{8}$ " between centers; lug type terminals out front of case; temp. range -55°C to 75°C (-67°F to 167°F).	Feedback	CD DY-6010	Army Spec. 71-516	
C-411	CAPACITOR: same as ref C-401.	Cathode bypass			
C-412	CAPACITOR: fixed paper dielectric; castor oil impregnated; 2.0 mf; $\pm 10\%$; tolerance 600 vdcw; 1200 volts d-c test; steel case hot-tinned coated; case dimensions $1\frac{1}{8}$ " high x 2" wide x 2" deep; mounting area $2\frac{13}{16}$ " x 2"; mounting tabs out each side of case; mounting holes $2\frac{3}{8}$ " on centers; lug type terminals out front of case; can stand twice the rated voltage for 15 seconds; temp. range -55°C to 75°C (-67°F to 167°F).	Screen filter	SS 2537-6	Army Spec. 71-516	
C-413	CAPACITOR: fixed paper dielectric; castor oil impregnated; 6.0 mf; $\pm 10\%$; 600 vdcw; 1200 volts d-c test; steel case finished in corrosion resisting gray paint; case dimensions $4\frac{5}{8}$ " high x $2\frac{1}{2}$ " wide x $1\frac{1}{8}$ " deep; height over terminals $5\frac{3}{8}$ "; mounted by detachable mounting strap; mounting area $1\frac{1}{4}$ " x $3\frac{11}{16}$ "; mounting holes $3\frac{1}{4}$ " on centers; terminals stud-bushing type out top of case; temp range -55°C to 75°C (-67°F to 167°F).	Power supply filter	SS 20470	Army Spec. 71-516	
C-414†	CAPACITOR: same as ref C-402.	Line bypass			
CR-401	RECTIFIER: balanced; copper oxide; 1.9 volts 90 cycles per second across terminals 9 and 6; proportional d-c output across terminals 5 and 8 (tied together) and 7; 1.9 volts 150 cycles per second across terminals 2 and 3; proportional d-c output across terminals 1 and 4 (tied together) and 7; 2.5 milliamperes d-c in common return to terminal 7; impregnated and potted in gray painted case; $1\frac{3}{4}$ " x $1\frac{3}{4}$ " x 1"; nine solder lug terminals on bottom on insulating bakelite panel; surface mounting; three screws fasten into tapped inserts in top of case spaced triangularly $1\frac{3}{8}$ " x $1\frac{3}{8}$ " x $1\frac{1}{2}$ ".	Course indicator rectifier	WE No. D-167020		

† Used with Indicator ID-70/CRN-10 only.

TABLE OF REPLACEABLE PARTS (Cont'd)
Major Assembly: Indicator ID-70/CRN-10 or ID-70A/CRN-10

Model: Radio Set AN/CRN-10

Reference Symbol	Army Stock Number Navy Stock Number British Ref Number	Name of Part and Description	Function	Mfr. and Desig. or Standard Type	Contr or Govt Dwg or Spec. No.
CR-402	3HK4885.7	RECTIFIER: bridge, selenium; 100 volts at 0.075 amperes; 1 stack; eight $\frac{3}{4}$ " discs per arm; 4 arms per stack; overall dimensions $4\frac{1}{2}$ " long x 1" wide by $1\frac{3}{4}$ " high; mounted by "El" type brackets; mounting holes on $4\frac{1}{16}$ " x $\frac{3}{16}$ " centers; gray finish.	Relay supply	F No. 1D0536	
E-401	#	RESISTOR BOARD: $\frac{1}{16}$ " bakelite XXX; N.E.M.A. publication No. 39-57 GR. dimensions $32\frac{1}{32}$ " x $1\frac{1}{2}$ " x $\frac{1}{16}$ ".	Support resistors		Dwg. RA-4185-1
E-402	#	RESISTOR BOARD: $\frac{1}{16}$ " natural bakelite XXX; N.E.M.A. publication No. 39-57; dimensions $21\frac{1}{16}$ " x $1\frac{1}{2}$ " x $\frac{1}{16}$ ".	Support resistors		Dwg. RA-4221-1
F-401		FUSE: fuselron; $\frac{1}{2}$ ampere; 250 volt; ferrule type, overall length $1\frac{1}{4}$ " diameter of tube $\frac{9}{32}$ "; blows 200% overload in 25 seconds; 500% overload in 3 seconds.	Transformer protection	BUSS No. MDM- $\frac{1}{2}$	
F-402		FUSE: same as ref F-401.	Alarm circuit protection		
H-401		SCREW: captive; free turning brass; $\frac{25}{32}$ " long; head $\frac{1}{16}$ " diameter x $\frac{3}{16}$ " knurled; shank 0.150" diameter x $1\frac{13}{32}$ " long unthreaded; threaded section $\frac{3}{16}$ " long x 10-32 thread; finish dull white nickel plate.			Dwg. F-32666-12-59
H-402		INSERT: Hard drawn copper rod; $\frac{3}{8}$ " diameter x $\frac{1}{16}$ " long; dull white nickel finish; tapped section $\frac{1}{8}$ " long; tapped 10-32; shoulder $\frac{5}{16}$ " long; sleeve $\frac{1}{8}$ " long; untapped section 0.218" x $\frac{5}{16}$ " long.			Dwg. F-32667-12-7-3
H-403	2ZK7857-8	RETAINER RING: $\frac{25}{32}$ " outside diameter; gap $\frac{1}{32}$ "; No. 21 (0.028) spring temper brass wire.			Dwg. F-32668-1-2
I-401		PANEL LIGHT ASSEMBLY: consisting of:	Course alarm pilot light		
I-401A	4CK5348.2	SWITCHBOARD LAMP HOLDER: for mounting on $\frac{1}{16}$ " panel; overall dimensions $2\frac{3}{4}$ " long x 1" wide x $\frac{1}{2}$ " barrel; for switch-board type lamp.		AUE DB-86	
I-401B	4CK2505.2	RED GLASS LAMP CAP: maximum diameter $\frac{5}{8}$ "; shank diameter $\frac{1}{16}$ "; shank length $1\frac{1}{32}$ ".		AUE DC-88	
I-401C		SWITCHBOARD LAMP: 60 volts; 50 ma 500 min. end foot ep.		AUE DB-85	
I-402		PANEL LIGHT ASSEMBLY: consisting of:	Course alarm		
I-402A		SWITCHBOARD LAMP HOLDER: for mounting on $\frac{1}{16}$ " panel; overall dimensions $2\frac{3}{4}$ " long x 1" wide x $\frac{1}{2}$ " barrel; for switch-board type lamp.	Pilot light	AUE DB-86	

I-402B	4CK2505.3	GREEN GLASS LAMP CAP: maximum diameter $\frac{5}{8}$ "; shank diameter $\frac{7}{16}$ "; shank length $1\frac{1}{2}$ ".	AUE DC-89
I-402C		SWITCHBOARD LAMP: 60 volts; 50 ma; 500 min. end foot cp.	AUE DB-85
I-403		PANEL LIGHT ASSEMBLY: consisting of:	Course level alarm pilot light
I-403A		SWITCHBOARD LAMP HOLDER: for mounting on $\frac{1}{16}$ " panel; overall dimensions $2\frac{3}{4}$ " long x 1" wide x $\frac{1}{2}$ " barrel; for switchboard type lamp.	AUE DB-86
I-403B	4CK2505.4	AMBER GLASS LAMP CAP: maximum diameter $\frac{5}{8}$ "; shank diameter $\frac{7}{16}$ "; shank length $1\frac{1}{2}$ ".	AUE DC-90
I-403C		SWITCHBOARD LAMP: 60 volts; 60 ma; 500 min. end foot cp.	AUE DB-85
I-404		PANEL LIGHT ASSEMBLY: consisting of:	"ON-OFF" pilot light
I-404A		SOCKET ASSEMBLY: lamp shell zinc alloy; cronak finish panel ring; double contact spring tension bayonet socket for S-6 bulb; retracting ferrule of threaded bakelite; shell $1\frac{1}{4}$ " threaded for panel mounting; length of threaded shell $1\frac{3}{8}$ "; panel ring $1\frac{1}{2}$ "; extended depth $1\frac{5}{8}$ " overall; fungus treated.	KL 660 Bulls-Eye
I-404B		LENS: internally frosted, externally smooth green glass lens mounted in ring locking mount.	KL 660 Bulls-Eye
I-404C		LAMP: Double contact bayonet base 120 volt; 6 watt clear; S-6 bulb.	GE S-6
I-405		PANEL LIGHT ASSEMBLY: consisting of:	Alarm pilot light
I-405A		SOCKET ASSEMBLY: lamp shell zinc alloy; cronak finish panel ring; double contact spring tension bayonet socket for S-6 bulb; retracting ferrule of threaded bakelite; shell $1\frac{1}{4}$ " threaded for panel mounting; length of threaded shell $1\frac{3}{8}$ "; panel ring $1\frac{1}{2}$ " extended depth $1\frac{5}{8}$ " overall; fungus treated.	KL 660 Bulls-Eye
I-405B		LENS: internally frosted, externally smooth red glass lens mounted in ring locking mount.	
I-405C		LAMP: double contact bayonet base 120 volt; 6 watt clear; S-6 bulb.	GE S-6
I-406	4ZK405	ALARM BELL: vibrating "Adaptabel" for 115 volt; 60 cycle operation; overall dimensions $6\frac{1}{2}$ " x $6\frac{1}{2}$ " x $3\frac{1}{2}$ "; 6" gong; mounting oven; 5" x 5"; mounted to panel by four 10-32 machine screws on 3" centers; weatherproof construction; finished in gray, corrosion resistant paint.	G Edwards No. CS-333 Army Spec. 71-2202A

TABLE OF REPLACEABLE PARTS (Cont'd)

Model: Radio Set AN/CRN-10 Major Assembly: Indicator ID-70/CRN-10 or ID-70A/CRN-10

Reference Symbol	Army Stock Number Navy Stock Number British Ref Number	Name of Part and Description	Function	Mfr. and Desig. or Standard Type	Contr or Govt Dwg or Spec. No.
J-401	2ZK8677.17	RECEPTACLE: aluminum shell; overall $1\frac{3}{8}$ " x $1\frac{3}{8}$ " x $1\frac{11}{16}$ " long; four mounting holes on $1\frac{1}{16}$ " x $1\frac{1}{16}$ " centers; $1\frac{1}{8}$ "-18 threaded section; female bakelite insert; contacts 5 No. 16 and 2 No. 12; contact spacing $\frac{1}{8}$ "; shell finish fine grain metallic sand blast satin.		APH AN3102-18-9S	Spec. AN-W-C-591
J-402	2Z8799-155	RECEPTACLE: aluminum shell; overall $1\frac{3}{8}$ " x $1\frac{3}{8}$ " x $2\frac{9}{16}$ " long (over shell); four mounting holes on $\frac{1}{16}$ " x $\frac{1}{16}$ " centers; $\frac{3}{4}$ "-20 threaded section; male bakelite insert; contacts 2 No. 20; contact spacing $\frac{1}{16}$ "; shell finish fine grain metallic sand blast satin.		APH AN3102-12S-3P	Spec. AN-W-C-591
J-403	2Z8674.21	RECEPTACLE: aluminum shell, overall dimension $1\frac{3}{8}$ " x $1\frac{3}{8}$ " x $1\frac{1}{8}$ " x $2\frac{1}{16}$ " long; four mounting holes on $1\frac{1}{16}$ " x $1\frac{1}{16}$ " centers; $1\frac{1}{8}$ "-18 threaded section; female bakelite insert; contacts 4 No. 16; contact spacing $\frac{1}{8}$ "; shell finish fine grain sand blast satin.		APH AN3102-18-4S	Spec. AN-W-C-591
K-401	3FK2880-1	RELAY: Sensitrol; galvanometer movement; double fixed contact double throw; solenoid reset; normally open, stationary contacts magnetic; movable contact iron; contact capacity 5 watts at 110 volts; 10 to 100 ohms contact resistance; 230 volts rms insulation; zero center scale; scale range 2.5-0-2.5 microamperes d-c single galvanometer coil; coil resistance 2100 ohms; $\pm 20\%$; operates on increasing current of either polarity; contacts set at each end of scale; solenoid reset to operate from 115 volts rms 60 cycle a-c, calibrated to mount in a horizontal position on bakelite panel; $3\frac{1}{2}$ " projecting metal case; surface mounting; $2\frac{3}{4}$ " diameter x $3\frac{3}{4}$ " long; four mounting screws spaced 1.406" x 0.703"; tropical treatment.	Course alarm	WI Model 705 Type 6	Spec. F-34436-1
K-402	3FK2880-2	RELAY: Sensitrol; galvanometer movement; single fixed contact with solenoid reset; contact set off low end of scale to make contact upon removal of current through relay; stationary contact magnetic; movable contact iron; contact capacity 5 watts at 110 volts; 10 to 100 ohms contact resistance; 230 volts rms insulation; scale range 0-500 microamperes d-c; single galvanometer coil; coil resistance 50 ohms; $\pm 20\%$; solenoid reset to operate from 115 volts 60 cycles a-c; calibrated to mount in a horizontal position on bakelite panel; $3\frac{1}{2}$ " projecting metal case; surface mounting $2\frac{3}{4}$ " diameter x $3\frac{3}{4}$ " long; four mounting screws spaced 1.406" x 0.703"; tropical treatment.	Course level alarm	WI Model 705 Type 4	Spec. F-34436-1
K-403	2ZK7645-9	RELAY: time delay; DPST; normally open contacts; contacts 2-18 gauge silver; contact capacity 50 watts (1 ampere, maximum); voltage insulation 500 volts rms 60 cycle a-c test; solenoid type coil; coil resistance 55 ohms; coil current 0.051-0.0685 amperes; operating voltage 55 volts 60 cycles a-c; overall dimensions (without cover) $4\frac{1}{4}$ " x $1\frac{3}{16}$ " x $1\frac{3}{4}$ "; overall dimensions (with cover) $4\frac{11}{16}$ " x $1\frac{5}{16}$ " x $2\frac{1}{16}$ "; mounting area $1\frac{5}{16}$ " x $2\frac{1}{16}$ "; lug type terminals project through panel; complete with types No. RB-51 cover and No. RB-94 bracket.	Alarm delay relay	AUE Type FQA	Spec. F-34436-1

K-404	2ZK7650-C	RELAY: alarm delay; one SPST normally closed contacts; contacts No. 14 gauge silver; contact capacity 50 watts (1 ampere maximum) voltage insulation 500 volts rms 60 cycle a-c test; solenoid type coil; coil 28,000 turns No. 38 E.C. wire; coil resistance 3300-ohms; overall dimensions (without cover) $1\frac{3}{4}$ " x $1\frac{3}{4}$ " x 4"; overall dimensions (with cover) $2\frac{1}{16}$ " x 2 " x $4\frac{7}{8}$ " mounting area $2\frac{1}{16}$ " x 2 "; lug type terminals project through panel; complete with types No. RB-51 cover and No. RB-94 bracket.	Alarm delay	CPC Type E	Spec. F-34436-1
K-405	2ZK7650-C.1	RELAY: alarm delay, three SPST contacts; two normally closed; one normally open; contacts No. 14 gauge silver; contact capacity 50 watts (1 ampere maximum); voltage insulation 500 volt rms 60 cycle a-c test; solenoid type coil; coil 28,000 turns No. 38 E.C. wire; coil resistance 3300-ohms overall dimensions (without cover) $1\frac{7}{8}$ " x $1\frac{13}{16}$ " x 4"; overall dimensions (with cover) 2 " x $2\frac{1}{16}$ " x $4\frac{7}{8}$ "; mounting area, 2 " x $2\frac{1}{16}$ "; lug type terminals project through panel; complete with cover.	Alarm relay	CPC Type E	
K-406	2ZK7650-D.1	RELAY: reset; one SPST normally open contact; contacts No. 14 gauge silver; contact capacity 50 watts (1 ampere maximum) voltage insulation 500 volts, rms 60 cycle a-c test; solenoid type coil; coil 16,965 turns No. 38 E.C. wire; coil resistance 2000-ohms; overall dimensions (without cover) $1\frac{5}{8}$ " x $1\frac{3}{4}$ "; overall dimensions (with cover) 2 " x $2\frac{1}{8}$ " x $4\frac{7}{8}$ "; mounting area, 2 " x $2\frac{1}{8}$ "; lug type terminals project through panel; complete with cover.	Automatic reset relay	CPC Type E	
K-407	2ZK7652-C	RELAY: time delay; contacts: one SPDT and one SPST normally open; normally closed contacts of SPDT opens in 60 seconds +5 seconds and open contacts close +3 seconds after normally closed contact opens; all contacts return to normal upon relay becoming de-energized; contact capacity 5 amperes at 115 volts rms 60 cycle a-c; relay operated by synchronous type motor from a 110 to 120 volt rms 60 cycle a-c power supply; overall dimensions $5\frac{1}{8}$ " x $2\frac{1}{2}$ " x $3\frac{5}{8}$ "; mounting area $2\frac{1}{2}$ " x $3\frac{5}{8}$ "; six screw type terminals on lower portion of front cover.	Main time delay relay	CMR Type C602	Spec. F-34192-1 F-34436-1 Dwg. F-34193-1
L-401	3CK367-6	CHOKE: filter; 6000 turns No. 34 enameled AWG wire; insulation 0.0015" Kraft paper; 20 henries at 30 milliamperes; varnish impregnation; core material; case $3\frac{3}{4}$ " x $2\frac{3}{4}$ " x $3\frac{1}{2}$ "; height over terminals $4\frac{13}{16}$ "; bushing-stud type terminals through bottom of case; mounting area $3\frac{3}{4}$ " x $2\frac{3}{4}$ "; mounting holes $3\frac{1}{4}$ " x $2\frac{3}{16}$ " on centers; winding resistance 500 ohms; 15 volts pulsating d-c across terminals; 2500 rms 60 cycles a-c volts insulation to core and case.	Filter	AT S-57023	Spec. F-34024-1 F-33076-1 F-33770-1 Dwg. F-34025-1
M-401		METER: d-c microammeter; 150-0-150 microamperes; flush mounting; bakelite case; $3\frac{1}{8}$ " diameter; .63" flange; 2.75" body diameter; internal resistance 400 ohms; $\pm 20\%$; with not more than 10% overshoot at full scale input; scale calibrated in steps of 5 microamperes; scale range 150-0-150; moisture and fungus resistance treatment; to work over temperature range of -55°C (-67°F) to $+75^{\circ}\text{C}$ ($+167^{\circ}\text{F}$); calibrate to mount in $\frac{1}{8}$ " aluminum panel; max. depth behind flange, including terminal studs, $1\frac{1}{8}$ ".	Course indicator	WI 301	In accordance with C39.2-1944 where applicable

TABLE OF REPLACEABLE PARTS (Cont'd)

Model: Radio Set AN/CRN-10 Major Assembly: Indicator ID-70/CRN-10 or ID-70A/CRN-10

Reference Symbol	Army Stock Number Navy Stock Number British Ref Number	Name of Part and Description	Function	Mfr. and Desig. or Standard Type	Contr or Govt Dwg or Spec. No.
M-402	3FK8001-3	METER: a-c rectifier type voltmeter; 0-1.5 v at 2000 ohms per volt; scale range 0-1.5 v; red index mark at 1.0 v on scale; moisture and fungus resistance treatment; $3\frac{1}{2}$ " flush bakelite case; to work over temperature range of -55°C (-67°F) to $+75^{\circ}\text{C}$ ($+167^{\circ}\text{F}$); calibrate to mount in $\frac{1}{8}$ " aluminum panel; max. depth behind flange, including terminal studs, $1\frac{7}{8}$ ".	Input voltmeter	WI 301	In accordance with C39.2-1944 where applicable
N-401	#	NAME PLATE (ON): $\frac{1}{16}$ " thick; "Farlite" thermo setting plastic; dimensions $1\frac{3}{16}$ " x $\frac{7}{16}$ " x $\frac{1}{16}$ ".	Identify switch		Dwg. F-38869-3-3
N-402	#	NAME PLATE (ALARM): $\frac{1}{16}$ " thick; "Farlite" thermo setting plastic; dimensions $1\frac{3}{16}$ " x $\frac{7}{16}$ " x $\frac{1}{16}$ ".	Identify switch		Dwg. F-38869-3-15
N-403	#	NAME PLATE (COURSE): $\frac{1}{16}$ " thick; "Farlite" thermo setting plastic; dimensions $1\frac{3}{16}$ " x $\frac{7}{16}$ " x $\frac{1}{16}$ ".	Identify switch		Dwg. F-38869-3-14
N-404	#	NAME PLATE (RESET): $\frac{1}{16}$ " thick; "Farlite" thermo setting plastic; dimensions $1\frac{3}{16}$ " x $\frac{7}{16}$ " x $\frac{1}{16}$ ".	Identify switch		Dwg. F-38869-3-9
N-405	#	NAME PLATE (ALARM ON): $\frac{1}{16}$ " thick; "Farlite" thermo setting plastic; dimensions $2\frac{3}{16}$ " x $\frac{7}{16}$ " x $\frac{1}{16}$ ".	Identify switch		Dwg. F-38089-3-1-27
N-406	#	NAME PLATE (SENSITIVITY): $\frac{1}{16}$ " thick "Farlite" thermo setting plastic; dimensions $2\frac{3}{16}$ " x $\frac{7}{16}$ " x $\frac{1}{16}$ ".	Identify switch		Dwg. F-38089-3-15
N-407	#	NAME PLATE (FILTER INPUT): $\frac{1}{16}$ " thick; "Farlite" thermo setting plastic; dimensions $\frac{5}{16}$ " x $1\frac{9}{16}$ " x $\frac{1}{16}$ ".	Identify switch		Dwg. F-39353-3-3
N-408	#	NAME PLATE (COURSE): $\frac{1}{16}$ " thick; Farlite" thermo setting plastic; dimensions $\frac{5}{16}$ " x $1\frac{9}{16}$ " x $\frac{1}{16}$ ".	Identify switch		Dwg. F-39353-3-4
N-409	#	NAME PLATE (COURSE 150~ and 90~): $\frac{1}{16}$ " thick; "Farlite" thermo setting plastic; dimensions $2\frac{3}{8}$ " x $1\frac{1}{16}$ ".	Identify switch		Dwg. F-39472-1
N-410	#	NAME PLATE (COURSE OFF): $\frac{1}{16}$ " thick; "Farlite" thermo setting plastic; dimensions $1\frac{11}{16}$ " x $\frac{7}{16}$ " x 16 ".	Identify switch		Dwg. F-38090-3-8
N-411	#	NAME PLATE (Nameplate): No. 20 (0.032) GA 2S $\frac{1}{2}$ H sheet aluminum; dimensions $3\frac{1}{16}$ " x $1\frac{3}{16}$ " x $\frac{1}{16}$ ".	Identify apparatus		Dwg. RA-4720-3-2
O-401	2Z8401-5PH12	SHOCK MOUNTING: 12 pound capacity; consisting of a rubber insert $1\frac{1}{2}$ " in diameter by $\frac{5}{8}$ " thick; center metal ferrule 0.257 " ; mounted in an inverted cup shaped plate holder $2\frac{3}{8}$ " x $2\frac{3}{8}$ " square; assembly overall $2\frac{3}{8}$ " x $2\frac{3}{8}$ " x $1\frac{1}{16}$ " high; four mounting holes $1\frac{5}{16}$ " x $1\frac{5}{16}$ " centers.		L 150-PH-12	Dwg. F-34988-1-2

O-402	2Z5395-70/3	DIAL INDICATOR: free turning brass rod $\frac{1}{4}$ " x $\frac{1}{4}$ " x $1\frac{19}{32}$ " long; rod turned down for $\frac{3}{8}$ " of length and threaded 6-32; line engraved on square face per dwg; finish dull white nickel plate; engraved line filled with black.	Dwg. RA-4141-1
O-403	2Z3714-23	DIAL ASSEMBLY: consists of an etched dial plate of No. 20 gauge (0.032) half hard brass sheet; $1\frac{3}{4}$ " diameter; dial plate engraved 0 to 10 inclusive over 300° arc of dial; engraving filled with black background chrome plate satin finish; black phenolic dial knob attached to plate by 3-48 x $\frac{1}{4}$ " long flat head brass machine screws; knob set screw 8-32 x $\frac{1}{4}$ " long; bristol fluted socket cap point set screws.	(Knob) MJ No. 10005 Dwg. F-36730-1-2 F-36351-2-2
O-404	2Z3718.52	DIAL ASSEMBLY: consisting of an etched dial plate of No. 20 gauge (0.032) half hard brass sheet $1\frac{3}{4}$ " diameter; dial plate has a $\frac{3}{16}$ " long line engraved from the edge of the plate as shown in dwg; engraved line filled with black; back-ground chrome plate satin finish; black phenolic dial knob attached to plate by 3-48 x $\frac{1}{4}$ " long flat head brass screws; knob set screw 8-32 x $\frac{1}{4}$ " long bristol fluted socket cup point set screws.	(Knob) MJ No. 10005 Dwg. F-36730-1-3
O-405	3F2560-4	METER CASE AND GLASS ASSEMBLY: for Weston Model 705 Type 4 and 6 sensitrol relays; black bakelite case; overall dimensions $3\frac{3}{4}$ " diameter x $1\frac{5}{16}$ " deep.	WI No. 68496
O-406	2Z5395-70/2	GASKET: $\frac{1}{16}$ " thick Fairprene No. 5565 x $\frac{1}{2}$ " wide "L" shaped; one side $18\frac{1}{8}$ " long; other side $12\frac{1}{8}$ " long; six No. 21 (0.221) drill holes in gasket four on long side per dwg.	Dwg. RA-4191-2
O-407	2Z5395-70/1	GASKET: $\frac{1}{4}$ " thick pure gum stock rubber 20 to 25 Durom; rectangular gasket $\frac{3}{16}$ " wide x $10\frac{7}{8}$ " x $11\frac{1}{2}$ ".	Dwg. RA-4337-1
R-401	2ZK7296-5M.2	POTENTIOMETER: balance control; 5000-ohms; $\pm 10\%$; wire wound; linear taper; 2 watt; shaft $\frac{1}{4}$ " diameter x $\frac{3}{4}$ " long beyond bushing with screwdriver slot in shaft $\frac{1}{16}$ " x $\frac{1}{16}$ "; overall dimensions $1\frac{11}{16}$ " x $1\frac{21}{32}$ "; $\frac{3}{8}$ "-32 threaded bushing x $\frac{3}{8}$ " long measured from face of resistor; three lug type terminals outside; no flat on shaft.	IRC W-5000 or equal
R-402	3ZK6580-12	RESISTOR: fixed; 8000-ohms; $\pm 1\%$; 1 watt; wire wound resistor; enameled wire wound on slotted ceramic spool $\frac{9}{16}$ " outside diameter x $1\frac{1}{2}$ " long; inside spool diameter $\frac{1}{8}$ "; lug type terminals radially off ends of spool.	IRC WW4 or equal
R-403	3ZK6618-26	RESISTOR: fixed; 18,000-ohms; $\pm 1\%$; 1 watt; wire wound resistor; enameled wire wound on slotted ceramic spool $\frac{9}{16}$ " outside diameter x $1\frac{1}{2}$ " long; inside spool diameter $\frac{1}{8}$ "; lug type terminals radially off ends of spool.	IRC WW4 or equal
R-404		POTENTIOMETER: sensitivity control; 35,000-ohms; $\pm 20\%$; composition element linear taper; $1\frac{1}{3}$ watt; shaft $\frac{1}{4}$ " diameter x $1\frac{1}{8}$ " long beyond bushing; shaft has screw drives slot $\frac{1}{16}$ " x $\frac{1}{16}$ " overall dimensions $2\frac{1}{32}$ " x $1\frac{1}{16}$ "; $\frac{3}{8}$ "-32 threaded bushing x $\frac{3}{8}$ " long measured from face of resistor; three lug type terminals outside; no flat on shaft.	IRC Type C, CS, CF or D Stackpole Type MG or equal

Model: Radio Set AN/CRN-10 **TABLE OF REPLACEABLE PARTS (Cont'd)** **Major Assembly: Indicator ID-70/CRN-10 or ID-70A/CRN-10**

Reference Symbol	Army Stock Number Navy Stock Number British Ref Number	Name of Part and Description	Function	Mfr. and Desig. or Standard Type	Contr or Govt Dwg or Spec. No.
R-405	3ZK6100-117	RESISTOR: fixed 1000-ohms; $\pm 1\%$; 1 watt; wire wound resistor; enamelled wire wound on slotted ceramic spool $\frac{9}{16}$ " outside diameter x 1" long; inside spool diameter $\frac{1}{8}$ "; lug type terminals radially off ends of spool.	Filter load	IRC WW4 or equal	
R-406		RESISTOR: same as ref. R-402.	Voltage divider		
R-407		RESISTOR: same as ref. R-403.	Rectifier load		
R-408	3RC40BF105M	RESISTOR: fixed; 1 megohm; $\pm 20\%$; 2 watt composition; completely encased in molded bakelite body $1\frac{3}{4}$ " long x $\frac{5}{16}$ " diameter; 2 wire leads $1\frac{1}{2}$ " long; one lead from each end of resistor; lead mounting; RMA color coding.	Grid current limiting	RC40BF105M	C75.7-1944
R-409	3RC40BF304J	RESISTOR: fixed; 300,000 ohms; $\pm 20\%$; 2 watt; composition; completely encased in molded bakelite; body $1\frac{3}{4}$ " long x $\frac{5}{16}$ " diameter; 2 wire leads $1\frac{1}{2}$ " long; one lead from each end of resistor; lead mounting; RMA color coding.	Alarm time constant	RC40BF304J	C75.7-1944
R-410	3ZK6300-123	RESISTOR: fixed; 3000-ohm; $\pm 5\%$; 14-watt; wire wound; coated resistance element; $3\frac{1}{2}$ " long x $\frac{3}{4}$ " diameter; lug terminals radially off ends of resistor; Navy type; style Y except wire size; Grade I, Class II with two No. 10 insulating bushings.	Plate current limiting	IRC	Navy Spec. RE-13A-372J
R-411		RESISTOR: same as ref R-401.	Alarm time adjustment		
R-412	3RC40BF103M	RESISTOR: fixed 10,000 ohms; $\pm 20\%$; 2 watt; composition; completely encased in molded bakelite; body $1\frac{3}{4}$ " long x $\frac{5}{16}$ " diameter; 2 wire leads $1\frac{1}{2}$ " long; one lead from each end of resistor; lead mounting; RMA color coding.	Bias voltage divider	RC40BF103M	C75.7-1944
R-413	3RC40BF103M	RESISTOR: fixed; 100,000 ohms; $\pm 20\%$; 2 watt; composition; completely encased in molded bakelite; body $1\frac{3}{4}$ " long x $\frac{5}{16}$ " diameter; 2 wire leads $1\frac{1}{2}$ " long; one lead from each end of resistor; lead mounting; RMA color coding.	Bias filter divider	RC40BF104M	C75.7-1944
R-414	3RC40BF513J	RESISTOR: fixed; 50,000 ohms; $\pm 20\%$; 2 watt; composition; completely encased in molded bakelite; body $1\frac{3}{4}$ " long x $\frac{5}{16}$ " diameter; 2 wire leads $1\frac{1}{2}$ " long; one lead from each end of resistor; lead mounting; RMA color coding.	Bias voltage divider	RC40BF513J	C75.7-1944
R-415	3ZK6080-40	RESISTOR: fixed; 800 ohms; $\pm 5\%$; 5 watt; wire wound; coated resistance element $1\frac{1}{2}$ " long x $\frac{9}{16}$ " diameter; lug terminals radially off ends of resistor. Navy style U except wire size; with two No. 10 insulating bushings; Grade I, Class II.	Plate current limiting	IRC	Navy Spec. RE-13A-372J

R-416		RESISTOR: same as ref R-414.	Dropping resistor		
R-417	3RC40BF205J	RESISTOR: fixed; 2-megohms; $\pm 5\%$; 2-watt; composition; completely encased in molded bakelite; body $1\frac{3}{4}$ " long x $\frac{9}{16}$ " diameter; 2 wire leads $1\frac{1}{2}$ " long; one lead from each end of resistor; lead mounting; RMA color coding.	Alarm time constant	RC40BF205J	
R-418		RESISTOR: same as ref R-408.	Grid current limiting		
R-419		RESISTOR: same as ref R-409.	Diode load		
R-420		RESISTOR: same as ref R-417.	Feedback		
R-421	3ZK6500-141	RESISTOR: fixed; 5000 ohms; $\pm 5\%$; 8 watt; wire wound coated resistance element; 2" long x $\frac{9}{16}$ " diameter; lug terminals radially off ends of resistor; Navy style V except wire size; Grade I, Class II with two No. 10 insulating bushings.	Voltage divider	IRC	Navy Spec. RE-13A-372J
R-422		POTENTIOMETER: sensitivity control; 5000 ohms; $\pm 10\%$; wire wound; linear taper; 2 watt; shaft $\frac{1}{4}$ " diameter $\frac{1}{2}$ " long beyond bushing; shaft to have flat, plane of which is 180° from centerline of middle connection lug when shaft has been rotated as far as possible in counterclockwise direction; bushing $\frac{3}{8}$ "-32 thread x $\frac{3}{8}$ " long measured from the face of the resistor; three lug type terminals outside.	Sensitivity		Dwg. F-37033-1-2
R-423		RESISTOR: same as ref R-415.	Cathode bias	IRC	
R-424		RESISTOR: same as ref R-421.	Screen filter	IRC	
R-425		RESISTOR: fixed; 11,000 ohms; $\pm 1\%$; 1 watt wire wound precision; slotted ceramic spool form $\frac{9}{16}$ " outside diameter x 1" long; inside spool diameter $\frac{1}{8}$ "; lug type terminals radially off ends of spool.	Input voltmeter multiplier	IRC WW-4	
R-425		RESISTOR: fixed; 80,000 ohms; $\pm 1\%$; 1-watt; wire wound precision; slotted ceramic spool form $\frac{9}{16}$ " outside diameter x 1" long; inside spool diameter $\frac{1}{8}$ "; lug type terminals radially off ends of spool.	Input voltmeter multiplier	IRC WW4 or equal	Army Spec. 71-2202A
R-426	3ZK6620-101	RESISTOR: fixed; 20,000 ohms; $\pm 5\%$; 8 watt wire wound; coated resistance element; 2" long x $\frac{9}{16}$ " diameter; lug terminals radially off ends of resistor; Navy Style V except wire size; Grade I; Class II with 2 No. 10 insulating bushings.	Voltage divider	IRC	Navy Spec. RE-13A-372J
S-401	3ZK8310-8	SWITCH: rotary; 3 pole 3-position selector; no rated current carrying capacity; insulation voltage 3000 volts rms 60 cycles a-c flash test; Isolantite switch section $\frac{3}{16}$ " thick; bushing $\frac{3}{8}$ "-32 thread $\frac{3}{8}$ " long from face of switch. Shaft $\frac{1}{2}$ " long from end of bushing; shaft has a flat, as shown in drawing F-37034-1, at an angle of 30° degrees with centerline of stop arm with shaft rotated as far as possible counterclockwise; overall dimensions $1\frac{1}{8}$ " long x 2" diameter; mounting area 2" x $1\frac{1}{8}$ "; switch mounted by bushing.	Course level indicator switch	CI No. 2507 Modified	Dwg. F-37034-1

TABLE OF REPLACEABLE PARTS (Cont'd)
Major Assembly: Indicator ID-70/CRN-10 or ID-70A/CRN-10

Model: Radio Set AN/CRN-10

Reference Symbol	Army Stock Number Navy Stock Number British Ref Number	Name of Part and Description	Function	Mfr. and Desig. or Standard Type	Contr or Govt Dwg or Spec. No.
S-402	3ZK9824-44	SWITCH: push button; DPST normally open; non-locking; no rated current carrying capacity; insulation voltage 1000 volts d-c test; overall dimensions $2\frac{1}{8}$ " x $1\frac{1}{16}$ " x $\frac{3}{4}$ "; mounting area $\frac{3}{4}$ " x $1\frac{1}{16}$ "; bushing mounted; $\frac{3}{8}$ "-32 thread bushing $\frac{3}{8}$ " long; lug type terminals at rear of switch.	Alarm reset	MAL No. 2004	
S-403	3ZK9861-3	SWITCH: three-way type; SPDT; 10 amps. at 125 volts; 5 amperes at 250 volts; overall dimensions 2 " x $\frac{7}{8}$ " x $1\frac{5}{8}$ " mounting plate $2\frac{1}{4}$ " x $\frac{1}{8}$ " overall. Body of switch brown bakelite.	"ON-OFF" switch	PS No. 1311	
T-401†		TRANSFORMER: Audio-frequency; input 300 to 3500 cycles per second; two windings; impedance ratio 600 ohms to 100,000/25,000 ohms; secondary tapped; vacuum wax impregnated; designed to carry O.D.C. unbalance in windings; cased in a sheet steel case $3\frac{1}{2}$ " x $2\frac{3}{4}$ " x $3\frac{3}{4}$ " overall; case finished in black Duco; flush mounting area $2\frac{3}{4}$ " x $3\frac{3}{4}$ "; mounting holes in $3\frac{1}{4}$ " x $2\frac{3}{16}$ " centers; five bushing stud type terminals out bottom of transformer case; height over terminals $4\frac{5}{8}$ ".	Audio input	AT	Spec. F-34196-1 F-33076-1 Dwg. F-34197-1 F-33770-1
T-401†	2ZK9635-18	TRANSFORMER: a-f; input 0.09 to 3.5 kc; two windings; impedance ratio 600 ohms to 100,000 ohms; secondary-tapped; vacuum wax impregnated; designed to carry O.D.C. unbalance in windings; cased in a sheet steel case $3\frac{1}{2}$ " x $2\frac{3}{4}$ " x $3\frac{3}{4}$ " overall; case finished in black Duco; flush mounting area $2\frac{3}{4}$ " x $3\frac{3}{4}$ "; mounting holes in $3\frac{1}{4}$ " x $2\frac{3}{16}$ " centers; five bushing stud type terminals out bottom of transformer case; height over terminals $4\frac{5}{8}$ "; temperature range -55°C to $+71.1^{\circ}\text{C}$ (-67° to $+163^{\circ}\text{F}$).	Audio input	F	Spec. F-34196-1 F-33076-1 Dwg. F-34197-1
T-402†		TRANSFORMER: output, plate to line; 0.06 to 1.3 kc.; two windings impedance ratio 10,000 ohms to 300 ohms; no winding taps; load impedance 300 ohms; vacuum varnish impregnated, 14 ma. d-c unbalance in primary; cased in sheet steel case $4\frac{7}{16}$ " x $5\frac{3}{16}$ " x $3\frac{5}{16}$ " overall; case finished in black Duco; flush mounting area $5\frac{3}{8}$ " x $3\frac{5}{16}$ "; mounting holes on $4\frac{7}{8}$ " x $2\frac{5}{8}$ " centers. Four bushing stud type terminals out bottom of transformer case; height over terminals $5\frac{13}{16}$ ".	Plate of JAN-6K6GT to 300 ohm line	AT	Spec. F-34026-1 F-33076-1 Dwg. F-34027-1
T-402†		TRANSFORMER: output, plate to line; .06 to .25 kc.; two windings; impedance ratio 10,000 ohms to 10,000 ohms; no winding taps; load impedance 10,000 ohms; vacuum varnish impregnated, 14 ma. d-c unbalance in primary; cased in sheet steel case $4\frac{3}{8}$ " x $5\frac{3}{8}$ " x $3\frac{5}{16}$ " overall; case finished in black Duco; mounting holes on $4\frac{7}{8}$ " x $2\frac{5}{8}$ " centers, four bushing stud type terminals out bottom of transformer case; height over terminals $5\frac{13}{16}$ ".	Output coupling	F	Spec. RA-6288-1 F-33076-1 Dwg. RA-6289-1

† Used with Indicator ID-70/CRN-10 only. ‡ Used with Indicator ID-70A/CRN-10 only.

T-403†	TRANSFORMER: power; primary voltage 115 volts 60 cycles a-c; one primary and two secondary windings; secondary No. 1-470/235 volts at 20 milliamperes; secondary No. 2 6.3 volts at 2.0 amperes; transformer rating 0.022 kilovolts; resistance primary winding 9.78 ohms; resistance secondary winding No. 1-666.5 ohms and resistance secondary winding No. 2-0.13 ohms at 29.5°C (85.1°F) vacuum varnished core and coil impregnation; cased in a sheet steel case 4 1/16" x 5 3/8" x 3 5/16" overall; case finished in black Duco; flush mounting dimensions 5 3/8" x 3 5/16" x 3 5/16"; mounting holes on 4 7/8" x 2 3/4" centers; seven bushing stud type terminals out bottom of transformer case; height of transformer over terminals 5 3/4"; shielded; insulation voltage; primary to secondary, core and case 2500 volts rms 60 cycle a-c; secondary to primary, core and case 2500 volts rms 60 cycle a-c; high voltage winding center-tapped; ambient temperature range -20°C (68°F) to 460°C (140°F).	Plate and filament transformer	AT	Spec. F-34066-1 F-33076-1 F-33770-1 Dwg. F-34067-1
T-403‡	TRANSFORMER: power; primary voltage 115 volts 60 cycles a-c; one filament primary and three secondary windings; sec. No. 1, 470/235 volts at .030 amperes; sec. No. 2, 115 volts at .050 amperes; sec. No. 3, 6.3 volts at 2.65 amperes; transformer rating .022 kilovolts; resistance pri. winding 9.78 ohms; resistance sec. No. 1, 350 ohms; resistance sec. No. 2, 43 ohms; resistance sec. No. 3, .07 ohms; vacuum varnished core and coil impregnation; cased in a sheet steel case 4 7/16" x 5 3/8" x 3 5/16" overall; case finished in black Duco; flush mounting dimensions 5 3/8" x 3 5/16" x 3 5/16"; mounting holes on 4 7/8" x 2 5/8" centers; nine bushing stud type terminals out bottom of case; height of transformer over terminals 5 5/8"; shielded; insulation voltage, pri. to sec., core and case, 2500 volts rms 60 cycles a-c; secondaries to pri., core and case, 2500 volts rms 60 cycles a-c; high-voltage winding center-tapped; ambient temperature range, -55°C to +71.1°C (-67°F to +163°F).	Plate and filament	F	Spec. RA-6284-1 F-33076-1 F-33770-1 Dwg. RA-6285-1
V-401	TUBE: JAN-2051 (VT-109) Commercial 2051.	Alarm delay	RCA	
V-402	TUBE: JAN-6H6 (VT-90) Commercial 6H6.	Alarm rectifier	RCA	
V-403	TUBE: Same as ref V-401	Alarm		
V-404	TUBE: JAN-6K6GT; (VT-152) Commercial 6K6GT.	Amplifier	RCA	
V-403	TUBE: JAN-6X5GT (VT-126-B) Commercial 6X5GT.	Rectifier	RCA	
X-401	TUBE SOCKET: 8 prong steatite; contacts of silver plated bronze or beryllium copper; overall dimensions 1 1/4" diameter x 1 3/16" over contacts; with retainer ring slot and retainer ring for chassis mounting.		APH Type SS-8	Dwg. F-11496-14-112
Z-401	FILTER: 90 cycle band pass; impedance ratio 10,000 ohms; 1500 ohms at 90 cycles per second; component transformer, coils and capacitors impregnated and potted in case; metal case 1 23/32" x 3 3/4" x 3 1/4"; gray painted; four solder lug terminals on bottom; d-c resistance between terminals 1 and 2, -177 ohms; between 3 and 4, -10,000 ohms; panel mounting by screws which fasten into tapped inserts on side of case.	90 cycle filter	WE KS-8726	

Revised 20 October 1945

RESTRICTED

† Used with Indicator ID-70/CRN-10 only. ‡ Used with Indicator ID-70A/CRN-10 only.

7-50
Model: Radio Set AN/CRN-10

TABLE OF REPLACEABLE PARTS (Cont'd)
Major Assembly: Indicator ID-70/CRN-10 or ID-70A/CRN-10

Reference Symbol	Army Stock Number Navy Stock Number British Ref Number	Name of Part and Description	Function	Mfr. and Desig. or Standard Type		Contr or Govt Dwg or Spec. No.
Z-402	2ZK9632-55	FILTER: 150-cycle band pass; impedance ratio 10,000 ohms; 1000 ohms at 150 cycles per second; component transformer, coils and capacitors impregnated and potted in case; metal case 1 3/32" x 3 3/4" x 3 1/4"; gray painted; four solder lug terminals on bottom; d-c resistance between terminals 1 and 2,—177 ohms, between 3 and 4,—10,000 ohms; panel mounting by screws which fasten into tapped inserts on side of case.	150-cycle filter	WE	KS-8727	

Model: Radio Set AN/CRN-10

Major Assembly: Modulator and Bridge MD-24/CRN-10

501 to 599 Series
202537-24
MODULATOR AND BRIDGE MD-24/CRN-10: housed in an aluminum cabinet of 1/16" sheet aluminum and 1 1/4" x 1 1/4" x 1/8" aluminum angle; overall dimensions 23 1/2" x 43 3/8" x 20 5/8"; indicator lamp and connectors mounted in side panels; spare parts box mounted in cabinet behind front panel.

B-501
3HK310DA06-2
MOTOR: synchronous; single phase; 110-120 volts; 58.8 to 61.2 cycles per second; 1/15 horsepower; 1800 revolutions per minute; capacitor start and run; overall dimensions 13" long x 8 1/2" wide over junction box 6 19/32" high; surface mounting, four slots spaced 3" x 4 1/8" center to center; two 1/2" diameter 2 1/8" long shafts of stainless steel No. 18-8 situated axially at either end, to which rotors are attached; no flats on shafts; temperature range —40°C (–40°F) to +50°C (+122°F); motor windings impregnated for tropical service; motor mounted to frame by rubber ring gaskets painted with a coat of clear Glyptal lacquer No. 1202 before assembly; Type "SK" motor sleeve bearings; Klixon Thermal part No. B143 built on motor for protection; all parts such as bolts, nuts and screws cadmium plated; finish corrosion resistant; temperature rise of the copper shall not exceed 45°C (113°F).

Driving motor for Modulator
RM
AOT-M80636
SK
Spec.
F-34912-1
Dwg.
F-34913-12

C-501
CAPACITOR: fixed; oil impregnated paper; 15 mf; +20% —10%; 330 volts rms 60 cycles a-c working; 660 volts rms a-c flash test; steel case finished in corrosion resisting black paint; overall dimensions 4 9/16" high x 3 3/4" x 3 3/16" deep; terminals; two 10-32 threaded stud type out the top; terminal spacing 2".

Starting capacitor
AER
PO2
22720-1
Spec.
F-34263-1
Dwg.
NL-201704-1

C-502	2Z8066-3	<p>CAPACITOR: variable; 5 blade rotor assembly consisting of a set of 5 blade rotor elements of No. 14 (0.064) 52 s. hard aluminum sheet which are mounted on a support ring of 11" inside dia. x 12$\frac{1}{8}$" outside diameter paper base bakelite Grade XXXH; the rotor blades are also fastened to a 0.875" thick x 4" diameter hub of paper base bakelite Grade XXXH; the center of the hub is drilled 1.001" hole with .126" wide x 0.078" deep keyway; the entire assembly is mounted on a 1$\frac{1}{4}$" dia. steel (No. 2330 or NE-8630) spindle; overall dimensions of spindle 4" long x 1$\frac{1}{4}$" diameter; spindle drilled 0.5003" bore; aluminum rotor elements super sat. finish; bakelite ring and hub—light coat of bakelite varnish; spindle—cadmium plated 0.0005" spindle drilled for $\frac{1}{4}$-20 NC-3 for locking to shaft; spindle rotor assembly shoulder 1$\frac{3}{8}$" long; spindle locking shoulder turned down and threaded $\frac{7}{8}$-14 NF-3 x 1$\frac{1}{16}$" long; spindle backing shoulder 1$\frac{1}{4}$" dia. x 1$\frac{29}{32}$" long overall dimensions of assembly; 12" diameter x 4" long over spindle.</p>	150-cycle modulator rotor	Dwg. RA-4144-14
C-503	2Z8066-4	<p>CAPACITOR: variable; 3 blade rotor assembly consisting of: a set of 3 blade rotor elements of No. 14 (0.064) 52 s. hard aluminum sheet which are mounted on a support ring of 11$\frac{1}{8}$" inside diameter x 12" outside diameter paper base bakelite tubing grade XXXH; the rotor blades are also fastened to a 0.875" thick x 4" diameter hub of paper base bakelite Grade XXXH; the center of the hub is drilled 1.001" hole with 0.126" wide x 0.078" deep keyway; the entire assembly is mounted on a 1$\frac{1}{4}$" diameter steel (No. 2330 or NE-8630) spindle; overall dimensions of spindle 4" long x 1$\frac{1}{4}$" diameter; spindle drilled 0.5003" bore; finish; aluminum rotor elements—Supersat.; bakelite ring and hub—light coat of bakelite varnish; spindle—cadmium plated 0.0005"; spindle-drilled for $\frac{1}{4}$-20 NC-3 for locking to shaft; spindle rotor assembly shoulder 1$\frac{3}{8}$" long; spindle locking shoulder turned down and threaded $\frac{7}{8}$-14 NF-3 x 1$\frac{1}{16}$" long; spindle backing shoulder 1$\frac{1}{4}$" diameter x 1$\frac{29}{32}$" long; overall dimensions of assembly; 12" diameter x 4" long over spindle.</p>	90-cycle modulator rotor	Dwg. RA-4143-14
E-501	3GK110-51.2	<p>INSULATOR: top of antenna bridge; $\frac{3}{16}$" micalex; overall dimensions 2$\frac{5}{8}$" x 3$\frac{3}{16}$"; corners cut at 45° angle and insulator drilled as per drawing.</p>	Top antenna bridge insulator	Dwg. HL-200739-1

TABLE OF REPLACEABLE PARTS (Cont'd) Major Assembly: Modulator and Bridge MD-24/CRN-10

Model: Radio Set AN/CRN-10

Reference Symbol	Army Stock Number Navy Stock Number British Ref Number	Name of Part and Description	Function	Mfr. and Desig. or Standard Type	Contr or Govt Dwg or Spec. No.
E-502	2ZK3011	END CONNECTOR ASSEMBLY: consisting of a cast red brass end connector 2" in diameter x $1\frac{3}{8}$ " long to which is soft-soldered a dual line shield of $\frac{3}{4}$ " outside diameter x 0.025" thick wall x $2\frac{3}{4}$ " long hard drawn seamless brass tubing; an end seal flange of No. 16 (0.059) U.S. standard gauge cold rolled steel x 3" diameter; having an axially located $\frac{3}{4}$ " hole, is silver soldered to the dual line shield at a distance of $\frac{7}{32}$ " from the connector end of the dual line shield, the end connector face has four No. 6-32 screw holes; and end connector insulator of steatite (brown glazed) $\frac{1}{4}$ " thick x $2\frac{1}{8}$ " diameter is attached to the face of the end connector by means of four No. 6-32 x $\frac{5}{8}$ " long round head cadmium plated brass machine screws; a $\frac{1}{16}$ " thick x $1\frac{15}{16}$ " Fairprene gasket material is provided for assembly between the face of the end connector and the end connector insulator; the end connector insulator is drilled with two 0.272" holes through which are passed fillister head silver plated brass machine screws; these fillister head screws are modified by having a 0.116" (No. 33 drill) hole drilled axially through the screw; these screws are assembled with the threaded portion facing outward from the end connector insulator; overall dimensions of assembly 3" diameter x $4\frac{7}{16}$ " long.	Modulator trough connector		Dwg. NL-200360-2-1
E-503	3GK1250-211	INSULATOR: transmission line insulator of Alsimag No. 196; overall dimensions $\frac{3}{16}$ " thick x 0.693" in diameter; insulator has two holes spaced 0.250"; holes to have clearance for No. 10 (0.1019) B & S gauge wire.	Transmission line insulator beads	Alsimag 211	Dwg. NL-200091-1
E-504	3GK1250-3.7	INSULATOR: transmission line insulator of Isolantite; overall dimensions $\frac{3}{16}$ " thick x 0.750" diameter; insulator has $\frac{1}{16}$ " slot x $\frac{1}{2}$ " long diametrically across insulator; 0.106" diameter holes through insulator on each side of slot and spaced 0.350".	Transmission line insulator beads		Dwg. NL-200498-1
E-505	3G1450-54.1	INSULATOR: $\frac{3}{16}$ " mycalex; overall dimensions $3\frac{3}{8}$ " x $3\frac{3}{8}$ "; all corners cut off and insulator drilled per drawing.	Bridge insulator cross modulation		Dwg. RA-4714-1-1
E-506	3G1450-54	INSULATOR: $\frac{3}{16}$ " mycalex; overall dimensions $3\frac{3}{8}$ " x $3\frac{3}{8}$ "; all corners cut off and insulator drilled per drawing.	Bridge insulator cross modulation		Dwg. RA-4714-1-2
E-507	3G1838-50.8	SPREADER: $\frac{1}{2}$ " Styramic; overall dimensions $3\frac{1}{8}$ " long x 1" high; insulator drilled per drawing.	Open line spreader		Dwg. RA-3696-1
E-508	3G1838-34.11	SPREADER: $\frac{1}{2}$ " Styramic; overall dimensions $2\frac{1}{8}$ " long x 1" high; insulator drilled per drawing.	Open line spreader		Dwg. NL-205088-1-2
E-509	3G1838-76.3	INSULATOR: $\frac{1}{2}$ " styramic; overall dimensions $4\frac{3}{4}$ " long x $1\frac{1}{2}$ " high; insulator drilled per drawing.	Transmission line insulator		Dwg. RA-3699-2-1

E-510	3G1838-76.4	INSULATOR: $\frac{1}{2}$ " styramic; overall dimensions $4\frac{3}{4}$ " long x $1\frac{1}{2}$ " high; insulator drilled, slotted and engraved per drawing.	Transmission line insulator	Dwg. RA-3699-2-2
E-511	2Z3022-44	END CONNECTOR ASSEMBLY: consisting of a cast red brass end connector 2" in diameter x $1\frac{3}{8}$ " long to which is soft soldered a dual line shield of $\frac{3}{4}$ " outside diameter x 0.025" thick wall x $11\frac{1}{16}$ " long hard drawn seamless brass tubing; an end seal flange of No. 16 (0.059) U.S. standard gauge cold rolled steel x 3" in diameter having an axially located $\frac{3}{4}$ " hole, is silver soldered to the dual line shield at a distance of $1\frac{1}{16}$ " from the connector end of the dual line shield; the end connector face has four No. 6-32 screw holes; an end connector insulator of steatite (brown glazed) $\frac{1}{4}$ " thick x $2\frac{1}{8}$ " diameter is attached to the face of the end connector by means of four No. 6-32 x $\frac{5}{8}$ " long round head cadmium plated brass machine screws; a $\frac{1}{16}$ " thick x $1\frac{1}{2}$ " Fairprene gasket is provided for assembly between the face of the end connector and the end connector insulator; the end connector insulator is drilled with two 0.272" holes through which are passed 114-28 fillister head silver plated brass machine screws. These fillister head screws are modified by having a 0.116" (No. 33 drill) hole drilled axially through the screw; the screws are assembled with the threaded portion facing outward from the end connector insulator; overall dimensions of assembly 3" diameter x $3\frac{3}{8}$ " long.	Modulator trough connector	Dwg. RA-3808-2
E-512	3GK110-51.1	INSULATOR: $\frac{3}{16}$ " mycalex; overall dimensions $3\frac{3}{16}$ " x $2\frac{5}{8}$ "; all corners cut off and insulator drilled per drawing.	Antenna bridge insulator	NL-200738-1
E-513	2Z9403.28	TERMINAL BLOCK: 3 point, molded bakelite; barrier type; six (6) 8-32 x $\frac{5}{16}$ " terminal screws; overall dimensions $2\frac{3}{4}$ " long x $1\frac{5}{16}$ " wide x $\frac{5}{8}$ " high.	JO 3-142	
H-501	6L4774-15.10K	CAPTIVE SCREW: free turning brass, $\frac{15}{16}$ " long; head $\frac{5}{8}$ " diameter x $\frac{1}{4}$ " knurled; shank 0.187" diameter x $\frac{1}{16}$ " long unthreaded; threaded section $\frac{1}{4}$ " long x $\frac{1}{4}$ -28 thread; finish dull white, nickel plate.	Dwg. F-32666-12-54	
H-502	2C2537-24.2	INSERT: chamet bronze rod; $\frac{1}{2}$ " diameter x $\frac{3}{8}$ " long; dull white nickel finish; tapped section $\frac{1}{8}$ " long; tapped $\frac{1}{4}$ -28; shoulder 0.312" long; sleeve 0.063" long; untapped section $\frac{1}{4}$ " long x 0.281 diameter.	Dwg. F-32667-12-36	
H-503	2C2537-24 R1	RETAINER RING: $\frac{3}{16}$ " outside diameter; gap. $\frac{1}{32}$ "; No. 18 (0.040) spring temper brass wire.	Dwg. F-32668-1-4	
I-501		PILOT LIGHT ASSEMBLY: consisting of:	Pilot light DL LT-9333-SA	
I-501A		SOCKET ASSEMBLY: lamp; shell of brass finished nickel plate; socket ferrule black bakelite; socket, screw type candelabra base; overall dimensions $3\frac{3}{4}$ " long x $1\frac{1}{4}$ " diameter (assembly; terminal lugs outrear assembly mounting ferrule; unthreaded portion $\frac{3}{8}$ " diameter x $\frac{1}{16}$ " long; mounting portion threaded $\frac{1}{16}$ "-27 x $\frac{3}{4}$ " long.)	Pilot light DL LT-9333-SA	
I-501B		LENS: internally frosted red glass lens mounted in ring locking mount $1\frac{1}{8}$ " diameter with $\frac{5}{16}$ " mounting shoulder; ring knurled.		

Model: Radio Set AN/CRN-10 **TABLE OF REPLACEABLE PARTS (Cont'd)** **Major Assembly: Modulator and Bridge MD-24/CRN-10**

Reference Symbol	Army Stock Number Navy Stock Number British Ref Number	Name of Part and Description	Function	Mfr. and Desig. or Standard Type	Contr or Gout Dwg or Spec. No.
I-501C		LAMP: 120 volt; screw type candelabra base Mazda pilot lamp.		GE S-6	
J-501	2ZK7112.14	RECEPTACLE: die cast aluminum shell; overall dimensions $2\frac{1}{8}$ " long x $1\frac{5}{8}$ " x $1\frac{5}{8}$ "; threaded one end $1\frac{3}{8}$ "-18; threaded other end $1\frac{3}{16}$ "-18; four (4) mounting holes on $1\frac{1}{4}$ " x $1\frac{1}{4}$ " centers; insert low loss mica filled bakelite; male contacts 2 No. 12; contact spacing $\frac{1}{8}$ "; finish fine grain metallic sand blast satin.		APH 97-3100-22-8PT	Spec. AN-W-C-591
L-501	2Z10008-75	LINE AND SECTION: radio frequency transmission line with adjustable coupled section; 90 cycle stator blades mounted on side; line and section mounted in No. 20 (0.032) B&S gauge 53 s. half hard sheet aluminum trough; overall assembled dimensions $33\frac{1}{2}$ " long x $5\frac{1}{4}$ " wide x 5" deep; finish Supersat.	90 cycle modulation		Dwg. RA-3675-3-1
L-502	2Z10008-74	LINE AND SECTION: radio frequency transmission line with adjustable coupled section; 150 cycle stator blades mounted on side; line and section mounted in No. 20 (0.032) B&S gauge 53 s. half hard sheet aluminum trough overall assembled dimensions $33\frac{1}{2}$ " long x $5\frac{1}{4}$ " wide x 5" deep.	150 cycle modulation		Dwg. RA-3675-3-2
N-501	#	NAME PLATE (60 Input): No. 20 (0.032) GA $25\frac{1}{2}$ " H aluminum, dimensions $3\frac{1}{8}$ " x $\frac{3}{8}$ " x $\frac{1}{32}$ ".	Identify plug		Dwg. RA-5466-1-1
N-502	#	NAME PLATE (Carrier): No. 20 (0.032) GA $25\frac{1}{2}$ " H aluminum; dimensions $3\frac{7}{8}$ " x $\frac{3}{8}$ " x $\frac{1}{32}$ ".	Identify plug		Dwg. RA-5587-2-8-7
N-503	#	NAME PLATE (Trans.-Mod.): No. 20 (0.032) GA $25\frac{1}{2}$ " H aluminum; dimensions $3\frac{7}{8}$ " x $\frac{3}{8}$ " x $\frac{1}{32}$ ".	Identify plug		Dwg. RA-5466-1-2
N-504	#	NAME PLATE (Nameplate): No. 20 (0.032) GA $25\frac{1}{2}$ " H sheet aluminum; dimensions $3\frac{1}{8}$ " x $1\frac{3}{16}$ " x $\frac{1}{16}$ ".	Identify apparatus		Dwg. RA-4720-3-2
O-501	2Z2636-3	CABLE CLAMP: die cast aluminum shell; overall dimensions; $1\frac{3}{8}$ " diameter x $1\frac{3}{16}$ " long; threaded $1\frac{3}{16}$ "-18; fits No. 20 and 22 shells; maximum cable $\frac{13}{16}$ "; finish fine grain metallic sand blast satin.	Clamp cable connector	APH AN3057-12	Spec. AN-W-C-591
O-502	6RK55233	WRENCH: fluted socket set screw wrench; "Rustproof".		Bristo $\frac{1}{4}$ "	
O-503	2Z8502-PH35	SHOCK MOUNT: 35 pound capacity; consisting of a rubber insert 2" in diameter x 1" thick; center metal ferrule 0.391" mounted in an inverted shaped plate holder 3" x 3" square; assembly overall 3" x 3" x $1\frac{1}{2}$ " high; four mounting holes on $2\frac{1}{2}$ " x $2\frac{1}{2}$ " centers.		L 200-PH-35	

O-504	2Z8404-9	SHOCK MOUNT: 25 pound capacity; consisting of a rubber insert 2" in diameter x 1" thick; center metal ferrule 0.391" mounted in a plate type holder 2 1/4" x 2 1/4" square; assembly overall 2 1/4" x 2 1/4" x 1" high; four mounting holes on 1 3/4" x 1 3/4" centers.	L 204-P-25	
O-505	3C2537-24/G3	GASKET: 1/16" Fairprene No. 5565; 1 1/16" x 37 3/8" long; five 5/16" holes drilled per drawing.	Dwg. RA-4658-2-1	
O-506	2C2537-24/1	GASKET: 1/16" Fairprene No. 5565; 1 1/16" wide x 21 1/4" long; four 5/16" and two 5/32" holes drilled per drawing.	Dwg. RA-4658-2-2	
O-507	2C2537-24/G1	GASKET: 1/16" Fairprene No. 5565; 1 1/16" wide x 21 1/4" long; four 5/16" holes drilled per drawing.	Dwg. RA-4658-2-3	
O-508	2C2537-24/G2	GASKET: 1/16" Fairprene No. 5565; 5 1/8" outside diameter x 4 5/16" inside diameter, six No. 23 (0.154) drill hole on 4 11/16" diameter spaced at 60° intervals.	Dwg. RA-4855-1	
O-509		CAP AND CHAIN: die cast aluminum with 5" long chain; fits No. 22 connector; overall 1 1/2" diameter x 9/16" long; threaded 1 3/8"-18; finish fine grain metallic sand blast satin.	APH 9760-22P	Receptacle protection
P-501		PLUG: Die cast aluminum shell; overall dimensions 2 1/8" long x 1 13/32" diameter threaded one end 1 3/16"-18; threaded contact end 1 3/8"-18; bakelite insert; male contacts 2 No. 12; contact spacing 1/8" finish fine grain metallic sand blast satin.	APH AN3106-22-8P	Electrical connection
P-502		PLUG: Die cast aluminum shell; solid shell type; overall dimensions 2 15/16" x 2 3/4" x 1 13/32"; threaded one end 1 3/16"-18; threaded contact end 1 3/8"-18; bakelite insert; female contacts 2 No. 12; contact spacing 1/8"; finish fine grain metallic sand blast satin.	APH AN3108-22-8S	Electrical connection
S-501	3ZK6800-10	SWITCH: two-piece plug type; single circuit 10 amperes at 125 volts; 5 amperes at 250 volts; receptacle overall dimensions 2 23/32" x 3/16" x 1 3/16"; plug body overall dimensions 1 25/32" x 9/16" x 1 13/32"; flush mounting area (receptacle) 1 1/16" x 9/16"; flush mounting area (plug) 1 25/32" x 9/16"; mounting hole centers (receptacle) 2 1/2"; mounting hole centers (plug) 1 3/8".	Spec. F-34261-1 Dwg. NL-201705-1	Safety switch
Z-501	2ZI1154-7	CROSS MODULATION BRIDGE ASSEMBLY: radio frequency; dual conductor shielded lines form square base 3 1/2"; height 26" input AN type connector; output two end connector assemblies; approximate overall dimensions, height 39" x width 23" x depth 8".	Dwg. RA-3810-14	Cross modulation prevention
X-502	2ZI1154-8	ANTENNA BRIDGE: radio frequency; dual conductor shielded lines form square base 3"; height 11 1/4"; input two end connector assemblies; output two AN type connectors; approximate overall dimensions; height 23 1/4" x width 18-34" x depth 11 7/8".	Dwg. RA-3754-16	

Model: Radio Set AN/CRN-10 **TABLE OF REPLACEABLE PARTS (Cont'd)** **Major Assembly: Course Detector TS-179/CRN-10 (Portable)**

Reference Symbol	Army Stock Number Navy Stock Number British Ref Number	Name of Part and Description	Function	Mfr. and Desig. or Standard Type	Contr or Govt Dwg or Spec. No.
601-699 Series	S. C. Stock No. 2C756-179	COURSE DETECTOR TS-179/CRN-10 (Portable) with the addition thereto of 1 complete set of tubes; course detector housed in an aluminum cabinet and stack assembly; overall dimensions 11 $\frac{1}{4}$ " wide x 8 $\frac{5}{8}$ " deep x 29 $\frac{5}{8}$ " high; all tuning controls and switches on the front panel; self contained Signal Corps type batteries furnish the power for the operation of this device.			
AS-601		ANTENNA: two section extension whip type; maximum outside diameter $\frac{5}{16}$ "; length when collapsed 19"; length fully extended 35"; satin finish nickel plate.	Antenna	PHIL No. 235	
BT-601		BATTERY BA-63: dry cells; 45 volts; cardboard cased; overall case dimensions 2 $\frac{15}{16}$ " x 2 $\frac{1}{4}$ " x 4 $\frac{1}{8}$ ". Signal Corps type BA-63; plug connector.	"B" supply	Signal Corps BA-63	JAN-B-18
BT-602		BATTERY BA-63: same as ref BT-601.	"B" supply		
BT-603		BATTERY BA-15A: dry cells; 1 $\frac{1}{2}$ volts; cardboard cased; overall case dimensions 2 $\frac{5}{8}$ " x 1 $\frac{1}{4}$ " x 3 $\frac{7}{8}$ ". Signal Corps type BA-15A; two screw type terminals on top of battery.	Filament supply	Signal Corps BA-15A	JAN-B-18
BT-604		BATTERY BA-63: same as ref BT-603.	Filament supply		
BT-605		BATTERY BA-2: dry cells; 22 $\frac{1}{2}$ volts; cardboard cased; overall case dimensions; 3 $\frac{7}{16}$ " x 2 $\frac{1}{16}$ " x 2 $\frac{5}{8}$ "; Signal Corps type BA-2; two 6" color coded wire leads out of top of battery.	C bias supply	Signal Corps BA-2	JAN-B-18
C-601		CAPACITOR: fixed; ceramic; 2 micromicrofarad; ± 0.25 mmfd; zero temperature coefficient; 500 volts DCW; ceramic tube cased; case dimensions 0.390" long x 0.190" diameter; wire leads 1 $\frac{1}{4}$ " long radially from ends of case.	Mixer coupling	CC20CH020C	JAN-C-20
C-602		CAPACITOR: fixed; ceramic; 10 micromicrofarad; ± 1 mmf; zero temperature coefficient; 500 volts DCW; ceramic tube cased; case dimensions 0.390" long x 0.190" diameter; wire leads 1 $\frac{1}{4}$ " long radially from each end of case.	Oscillator tuning	CC20CH100F	JAN-C-20

C-603	3DK9015V-14	CAPACITOR: variable; air dielectric; 15 micromicrofarads maximum; 6 micromicrofarads minimum capacity single-section; 5 plates per section; plates commercial brass; spaced 0.016"; breakdown voltage 500 volts rms 60 cycles a-c; ceramic insulation; no trimmers; all metal parts silver-plated; overall dimensions $1\frac{3}{32}$ " x $1\frac{1}{8}$ " x $1\frac{1}{8}$ " diameter shaft $\frac{3}{8}$ " long beyond bushing; mounting surface $1\frac{1}{32}$ " x $1\frac{1}{32}$ "; bushing $\frac{5}{16}$ "-32 threaded $\frac{3}{8}$ " long; stator support posts slotted for connection; rotor connection silver-plated; all silver-plated areas coated with a lacquer meeting Signal Corps specification SC-B-486-G; to operate in temp. range -55°C (-67°F) to $+71.1^{\circ}\text{C}$ ($+163^{\circ}\text{F}$); 95% humidity.	Oscillator tuning	F BU 22052 TEC AP-10 or equal	Dwg. RA-3633-2-1
C-604		CAPACITOR: same as ref C-603.	Input tuning		
C-605		CAPACITOR: same as ref C-602.	Oscillator grid isolation		
C-606	3K2030111	CAPACITOR: fixed; mica; 300 micromicrofarad; $\pm 5\%$; 500 volts DCW; bakelite case; case dimensions $\frac{5}{16}$ " long x $\frac{15}{32}$ " wide x $\frac{7}{32}$ " thick; $1\frac{1}{8}$ " long wire leads out each end of capacitor.	Oscillator filament bypass	CM20A301J	Spec. JAN-C-5
C-607		CAPACITOR: same as ref C-606.	Oscillator plate bypass		
C-608		CAPACITOR: same as ref C-606.	Bypass on mixer filament		
C-609	3K2010111	CAPACITOR: fixed; mica; 100 micromicrofarad; $\pm 10\%$; 500 volts DCW; bakelite case; case dimensions $\frac{5}{16}$ " long x $\frac{15}{32}$ " wide x $\frac{9}{32}$ " thick; $1\frac{1}{8}$ " long wire leads out each end of capacitor.	Mixer screen bypass	CM20A101K	Spec. JAN-C-5
C-610	3K3030212	CAPACITOR: fixed; mica; 3000 micromicrofarad; $\pm 5\%$; 500 volts DCW; bakelite case; case dimensions; $\frac{53}{64}$ " long x $\frac{53}{64}$ " wide x $\frac{9}{32}$ " thick; $1\frac{1}{2}$ " long wire leads out each end of capacitor.	Mixer screen bypass	CM30A302J	Spec. JAN-C-5
C-611		CAPACITOR: same as ref C-610.	Mixer screen bypass		
C-612		CAPACITOR: same as ref C-610.	1st i-f grid bypass		
C-613		CAPACITOR: same as ref C-610.	1st i-f filament bypass		
C-614		CAPACITOR: same as ref C-610.	1st i-f screen bypass		
C-615		CAPACITOR: same as ref C-610.	2nd i-f grid bypass		
C-616		CAPACITOR: fixed; paper dykanol "A" (chlorinated diphenyl) impregnated; 100,000 mmf; $\pm 10\%$; 600 vdcw; 1200 volts d-c test; cadmium plated steel case; case dimensions $2\frac{1}{32}$ " long x $1\frac{17}{32}$ " wide x $1\frac{1}{16}$ " high; lug type leads out same side of case; mounting tabs out both ends of condenser; mounting area $2\frac{1}{32}$ " x $1\frac{17}{32}$ "; $2\frac{1}{8}$ " between mounting holes (on centers); temp range -55°C to 75°C (-67°F to 167°F).	A.V.C. bypass		Signal Corps Spec. SC-D-512 Army Spec. 71-516
C-617		CAPACITOR: same as ref C-610.	2nd i-f filament bypass		
C-618		CAPACITOR: same as ref C-610.	2nd i-f screen bypass		

TABLE OF REPLACEABLE PARTS (Cont'd)
Major Assembly: Course Detector TS-179/CRN-10 (Portable)

Model: Radio Set AN/CRN-10

Reference Symbol	Army Stock Number Navy Stock Number British Ref Number	Name of Part and Description	Function	Mfr. and Desig. or Standard Type	Contr or Govt Dwg or Spec. No.
C-619		CAPACITOR: same as ref C-609.	Diode load bypass		
C-620	3K3510331	CAPACITOR: fixed; mica; 10,000 micromicrofarad; $\pm 10\%$; 300 volts DCW; bakelite cased; case dimensions $\frac{53}{64}$ " long x $\frac{53}{64}$ " wide x $1\frac{1}{32}$ " thick; $1\frac{1}{8}$ " long wire leads out each end of capacitor.	1st a-f input coupling	CM35C103K	Spec. JAN-C-5
C-621		CAPACITOR: same as ref C-616.	Screen bypass		
C-622	3DK9500-96	CAPACITOR: fixed; ceramic; 500 mmf; $\pm 20\%$; 300 vdcw; 500 volts d-c test; low temperature coefficient; ceramic tube cased; case dimensions 0.121 " outside diameter x $\frac{1}{2}$ " long; with $1\frac{3}{4}$ " leads taken off each end.	Detector amplifier plate bypass	MU 20-K-1200 or equal	
C-623		CAPACITOR: same as ref C-260.	2nd a-f input coupling		
C-624		CAPACITOR: same as ref C-620.	2nd a-f grid decoupling		
C-625		CAPACITOR: same as ref C-616.	Filter input coupling		
CR-601		RECTIFIER: balanced; copper oxide; 1.9 volts 90 cycles per second across terminals 9 and 6; proportional d-c output across terminals 5 and 8 (tied together) and 7; 1.9 volts 150 cycles per second across terminals 2 and 3; proportional d-c output across terminals 1 and 4 (tied together) and 7; 2.5 milliamperes d-c in common return to terminal 7; impregnated and potted in gray painted case; $1\frac{3}{4}$ " x $1\frac{3}{16}$ " x 1 "; nine solder lug terminals on bottom on insulating bakelite panel; surface mounting; three screws fasten into tapped inserts in top of case spaced triangularly $1\frac{3}{8}$ " x $1\frac{3}{8}$ " x $1\frac{1}{2}$ ".	Filter output rectifier	WE D167020 varistor	
CR-602	3HK4839-4	RECTIFIER: balanced; copper oxide; 4 disc; 4 terminal type; maximum current into rectifier 5 milliamperes; 1 volt maximum output; efficiency approximately 1.15 ma. input to 1.0 ma. output; overall dimensions .38" high x .47" wide x .52" deep over mounting tab; mounting area 0.47 " x 0.52 "; four leads each 1.7 " long out top of rectifier case; mounting tab has 0.128 " diameter mounting hole.	Meter rectifier	W1 No. D-89367	
E-601	#	RESISTOR BOARD: rectangular support for seven resistors; dimensions $1\frac{5}{16}$ " x $2\frac{5}{8}$ " x $\frac{3}{32}$ "; 14 holes No. 31 (0.120) drilled, along the side; 2 holes No. 30 (0.128) drilled for support of the board; bakelite Grade XXX.	Support resistors		Dwg. RA-4117-2-3 Spec. RA-5410-1
E-602	#	RESISTOR BOARD: dimensions $1\frac{5}{16}$ " x $3\frac{3}{4}$ " x $\frac{3}{32}$ "; 20 holes No. 31 (0.120) drilled, along the side; 1 hole No. 30 (0.128) drilled and countersunk for No. 4 FHMS; 1 hole No. 30 (0.128) drilled; bakelite Grade XXX.	Support resistors		Dwg. RA-4117-2-2 Spec. RA-5410-1

E-603	#	RESISTOR BOARD: dimensions $4\frac{7}{8}'' \times 1\frac{5}{16}'' \times \frac{3}{8}''$; 26 holes No. 31 (.120) drilled; 2 holes No. 30 (.128) drilled and countersunk for No. 4 FHMS; bakelite XXX.	Support resistors	Dwg. RA-4117-2-1 Spec. RA-5410-1
E-604	#	RESISTOR BOARD: dimensions $1\frac{5}{8}'' \times 3\frac{3}{4}'' \times \frac{3}{8}''$; 20 holes No. 31 (.120) drilled along the side; 1 hole No. 30 (.128) drilled and countersunk for No. 4 FHMS; 1 hole No. 30 (.128) drilled; bakelite Grade XXX.	Support resistors	Dwg. RA-4117-2-2 Spec. RA-5410-1
E-605	#	RESISTOR BOARD: rectangular support for 7 resistors; dimensions $1\frac{5}{16}''$ resistors $2\frac{5}{8}'' \times \frac{3}{8}''$; 14 holes No. 31 (.120) drilled along the side; 2 holes No. 30 (.128) drilled for support of the board; bakelite Grade XXX.	Support resistors	Dwg. RA-4117-2-3 Spec. RA-5410-1
E-606	3G1250-3.8	INSULATING BEADS: Isolantite; overall dimensions 0.140" long x 0.060" inside diameter x 0.135" outside diameter.	Flexible connector bead	ISO No. 1115
E-607	2GK1250-3.6	SHOULDER BUSHING: Alsimag No. 35; not glazed; shoulder 0.437" diameter x 0.140" long; through projection 0.307" diameter x 0.045" long; central hole 0.156" diameter; overall dimension 0.437" diameter x 0.185" long.	Insulating lining	AL No. E-210
E-608	3GK1118-2	SEPARATOR BUSHING: machinable Alsimag shoulder $\frac{1}{4}''$ diameter x $\frac{1}{16}''$ long; each sleeve 0.175" diameter x $\frac{1}{16}''$ long; No. 47 (0.0785") drill hole axially through insulator.	Insulating lining	AL
E-609	3GK1250-20.3	INSULATOR: Alsimag; $\frac{3}{8}''$ diameter x $1\frac{1}{4}''$ long; each end tapped 6-32 thread to a depth of $\frac{3}{8}''$.	Bar insulator	AL No. 1708
E-610	3GK1250-6.5	BASE INSULATOR: Alsimag No. 35; shoulder $\frac{3}{8}''$ diameter x $\frac{1}{4}''$ long; sleeve 0.240" diameter x .120" long; overall dimensions 0.37" long x $\frac{3}{8}''$ diameter.	Insulator separator	AL
E-611	3GK1250-4.2	CAP INSULATOR: Alsimag No. 35; overall dimensions $\frac{3}{8}''$ diameter x $\frac{1}{4}''$ long; large axial hole 0.25" diameter x 0.132" deep; small axial hole 0.147" diameter x 0.118" deep.	Separator insulator	AL
H-601	614774-15.865	CAPTIVE SCREW: free turning brass rod; $\frac{1}{4}''$ long x $\frac{1}{2}''$ diameter knurled head; shank 0.187" diameter x $\frac{1}{16}''$ long unthreaded; threaded section $\frac{1}{4}''$ long x $\frac{1}{4}''$ -28 thread; finish dull white nickel plate.	Fastener	Dwg. NL-201453-12-20
H-602	2C756-179 C2	INSERT: chamet bronze rod; $\frac{1}{2}''$ diameter x $\frac{13}{32}''$ long; finish dull white nickel plate; tapped section $\frac{1}{8}''$ long; tapped $\frac{1}{4}''$ -28; shoulder 0.317" long; sleeve 0.089" long; untapped section 0.281" long x $\frac{1}{2}''$ diameter.	Circular holder	Dwg. NL-201446-12-18
H-603	2C756-179 R1	RETAINER RING: $\frac{3}{8}''$ outside diameter; gap $\frac{1}{32}''$; No. 18 (0.040) B&S gauge spring temper brass wire.	Retainer	Dwg. NL-201511-1-2

Model: Radio Set AN/CRN-10 **TABLE OF REPLACEABLE PARTS (Cont'd)** **Major Assembly: Course Detector TS-179/CRN-10 (Portable)**

Reference Symbol	Army Stock Number Navy Stock Number British Ref Number	Name of Part and Description	Function	Mfr. and Desig. or Standard Type	Contr or Cont Dwg or Spec. No.
J-601	2Z5581-3	JACK: single open circuit phoné jack; tip and sleeve contacts; insulation conforms to section 5 of restricted army Spec. 271-1157 and must have absorption properties not greater than N.E.M.A. Grade XX. All metal parts plated to withstand 200 hour salt spray test; bushing mounted; $\frac{3}{8}$ "-32 bushing $\frac{5}{16}$ " long; overall dimensions $1\frac{1}{8}$ " x $1\frac{1}{4}$ " x $\frac{5}{8}$ ".	Output connector	MAL A 1	
L-601		COIL: r-f tank; $5\frac{3}{4}$ " turns No. 12 B&S gauge bare copper wire; solenoid wound; $\frac{1}{2}$ " diameter; $\frac{1}{8}$ " turn spacing; self supporting; one lead brought straight out for a distance of $\frac{9}{16}$ " and bent outward parallel to coil axis for $\frac{1}{4}$ "; other lead brought out for a distance of $\frac{9}{8}$ "; then bent inward and parallel to coil axis, end then bent into hook form; entire coil silver plated 0.0002"; resonant frequency 57 megacycles; inductance 0.24 microhenries; rated current 6.5 amperes.	Oscillator tank and output coil	F	Dwg. NL-200483-1
L-602		TRANSMISSION LINE ASSEMBLY: consisting of a balanced pickup coil; a rigid transmission line of half hard brass angle and two strap connectors; approximate overall dimensions $28\frac{1}{2}$ " long x $1\frac{5}{8}$ " wide x $1\frac{1}{16}$ " deep.	Antenna coupling line	F	Dwg. NL-201676-2
L-603		COIL: r-f tank; hair pin loop No. 12 (0.081") B&S gauge bare copper wire silver plated 0.0002; loop end 2" long; open end 1" long; at open end the coil leads are bent inward toward the central axis of coil plane for a distance of $\frac{1}{2}$ ", radius of loop $\frac{5}{8}$ " to center line of wire; resonant frequency above 75 megacycles; inductance .11 microhenries; rated current 6.5 amperes.	Mixer input coil	F	Dwg. NL-201665-1
L-604	3C336-11	COIL: r-f choke; 40 turns No. 26 wire; solenoid wound on a $\frac{1}{4}$ " diameter x $1\frac{3}{4}$ " ceramic form; $\frac{1}{4}$ " terminal straps at each end of form to which are attached $1\frac{1}{2}$ " wire leads; entire choke except leads coated with red citreous enamel; current carrying capacity 1000 milliamperes; resonant frequency above 75 megacycles; inductance 2.2 microhenries; rated current 0.25 amperes.	Oscillator plate choke		
M-601		METER: microammeter; 150-0-150 microamperes, flush panel mounting; black bakelite case; body diameter $2\frac{3}{4}$ "; flange diameter $3\frac{1}{8}$ "; depth $1\frac{11}{16}$ "; not more than 10% overthrow on ends of scale; graduations every five microamperes; resistance of meter 400 ohms, $\pm 20\%$; calibrated for mounting in No. 24 U.S. gauge (.025") steel panel; tropical treatment.	Course detector	WI 301	To meet AWS Spec. where applicable
N-601	#	NAME PLATE: (Key to switch positions) dimensions $3\frac{3}{8}$ " x 3 " x $\frac{1}{16}$ "; "Farlite" thermo setting plastic.	List of the switches		Dwg. NL-201341-1
N-602	#	NAME PLATE: (Inp. Tuning) dimensions $1\frac{1}{8}$ " x $\frac{1}{16}$ " x $\frac{1}{16}$ "; "Farlite" thermo setting plastic.	Identify switch		Dwg. NL-201341-1-1

N-603	#	NAME PLATE: (Osc. Tuning) dimensions $1\frac{7}{8}" \times \frac{1}{6}" \times \frac{1}{6}"$; "Farlite" thermo setting plastic.	Identify switch	Dwg. NL-201341-1-2
N-604	#	NAME PLATE: (A.F. Gain) dimensions $1\frac{7}{8}" \times \frac{1}{6}" \times \frac{1}{6}"$; "Farlite" thermo setting plastic.	Identify switch	Dwg. NL-201341-1-3
N-605	#	NAME PLATE: (Meter Multiplier) dimensions $1\frac{7}{8}" \times \frac{1}{6}" \times \frac{1}{6}"$; "Farlite" thermo setting plastic.	Identify switch	Dwg. NL-201341-1-4
N-606	#	NAME PLATE: (Phones) dimensions $1\frac{5}{8}" \times \frac{1}{6}" \times \frac{1}{6}"$; "Farlite" thermo setting plastic.	Identify switch	Dwg. NL-201341-1-5
N-607	#	NAME PLATE: (I.F. Gain); dimensions $1\frac{5}{8}" \times \frac{1}{6}" \times \frac{1}{6}"$; thermo setting plastic.	Identify switch	Dwg. NL-201341-1-6
N-608	#	NAME PLATE: (Meter Switch); dimensions $1\frac{5}{8}" \times \frac{1}{6}" \times \frac{1}{6}"$; thermo setting plastic.	Identify switch	Dwg. NL-201341-1-7
N-609	#	NAME PLATE: (A.V.C.); dimensions $1" \times \frac{7}{16}" \times \frac{1}{6}"$; "Farlite" thermo setting plastic.	Identify switch	Dwg. NL-201341-1-8
N-610	#	NAME PLATE: (M.V.C.); dimensions $1" \times \frac{7}{16}" \times \frac{1}{6}"$; "Farlite" thermo setting plastic.	Identify switch	Dwg. NL-201341-1-9
N-611	#	NAME PLATE: (BATT); dimensions $1" \times \frac{7}{16}" \times \frac{1}{6}"$; "Farlite" thermo setting plastic.	Identify switch	Dwg. NL-201341-1-10
N-612	#	NAME PLATE: (OFF); dimensions $1" \times \frac{7}{16}" \times \frac{1}{6}"$ "Farlite" thermo setting plastic.	Identify switch	Dwg. NL-201341-1-11
N-613	#	NAME PLATE: (TS-179/CRN-10); No. 20 (0.032) GA 2S $\frac{1}{2}$ H sheet aluminum.	Identify apparatus	Dwg. RA-4720-3-2 RA-6629-3-4
O-601	6LK4040-3	GASKET: $\frac{1}{32}"$ thick Fairprene No. 5565; overall dimensions $6\frac{1}{2}" \times 5\frac{7}{8}"$; holes drilled per drawing.	Antenna column gasket	Dwg. NL-201229-1-2
O-602	6LK4040-2	GASKET: $\frac{1}{32}"$ thick Fairprene No. 5565; overall dimensions $3\frac{1}{4}" \times 2\frac{3}{4}"$ holes drilled per drawing.	Antenna column gasket	Dwg. NL-201228-1
O-603	3Z1013.7	FUSE CLIP: Beryllium Copper; finish dull white nickel plate.	Hold fuse	LI No. 1217-B
O-604	2Z4867.131	GASKET: $\frac{1}{32}"$ thick Fairprene No. 5565; overall dimensions $10\frac{1}{16}"$ long x $3\frac{3}{8}"$ wide; cut and drilled per drawing.	Antenna column gasket	Dwg. RA-4698-1
O-605	2ZK5788-27	DIAL KNOB ASSEMBLY: black bakelite Grade XX; insert cold rolled steel $\frac{3}{8}"$ long; outside diameter 0.437" before knurling; inside diameter 0.252"; overall knob dimensions $1\frac{1}{8}"$ long x $1\frac{1}{16}"$ wide x $\frac{1}{2}"$ high.	Adjustment device	Dwg. NL-201348-1

TABLE OF REPLACEABLE PARTS (Cont'd)
Model: Radio Set AN/CRN-10
Major Assembly: Course Detector TS-179/CRN-10 (Portable)

Reference Symbol	Army Stock Number Navy Stock Number British Ref Number	Name of Part and Description	Function	Mfr. and Desig. or Standard Type	Contr or Govt Dwg or Spec. No.
O-606	6ZK4040-1	GASKET: $\frac{1}{32}$ " thick Fairprene No. 5565; outside diameter $3\frac{1}{2}$ "; inside diameter $2\frac{3}{16}$ "; three No. 18 (0.169") drill holes on $1\frac{9}{16}$ " radius at 120° intervals.	Meter gasket		Dwg. NL-201495-1
O-607	2ZK3876.15	CONDENSER DRIVE: pinion and gear assembly; drive ratio 6 to 1.	Condenser drive		Dwg. NL-201347-1
O-608	2ZK1102.7	TUBE SHIELD: steel; hot tinned dipped; overall dimensions $1\frac{11}{16}$ " high x $2\frac{3}{16}$ " diameter.	Protect tube	CMC No. 8632	
O-609	2ZK11102.9	TUBE SHIELD ADAPTER: steel; hot tinned dipped; U clamp; overall dimensions $1\frac{1}{8}$ " long x $2\frac{3}{16}$ " in U section; mounting holes on .875" centers.	Hold shield	CMC No. 8551	
O-610		GASKET: $\frac{1}{4}$ " soft gum rubber 20-25 Duron; square gasket; outside dimensions $10\frac{3}{8}$ " x $10\frac{3}{8}$ "; inside dimensions $9\frac{5}{8}$ " x $9\frac{5}{8}$ ".	Cover gasket		Dwg. RA-4612-2
O-611		GASKET: $\frac{1}{32}$ " thick Fairprene No. 5565; overall dimensions $1\frac{1}{16}$ " wide x $1\frac{1}{4}$ " long; 2 No. 29 (136) drill holes per drawing.	Cover gasket		Dwg. RA-4711-1-1
O-612		GASKET: $\frac{1}{32}$ " thick Fairprene No. 5565; overall dimensions $\frac{5}{8}$ " wide x $1\frac{1}{4}$ " long; 2 No. 29 (136) and 1 (290) drill holes per drawing.	Cover gasket		Dwg. RA-4711-1-2
O-613	#	DIAL PLATE: "Farlite" thermosetting plastic $\frac{1}{16}$ " thick x $1\frac{3}{4}$ " diameter; shaft hole $\frac{5}{8}$ " (0.625"); engraved 0 to 100 over 180° arc; mounting holes drilled per drawing.	Dial plate		Dwg. NL-201356-2-1
O-614	#	DIAL PLATE: "Farlite" thermosetting plastic $\frac{1}{16}$ " thick x $1\frac{3}{4}$ " diameter; shaft hole $\frac{5}{8}$ " (0.625"); engraved 0 to 100 over 360° arc; mounting holes drilled per drawing.	Dial plate		Dwg. NL-201356-2-2
O-615	#	DIAL PLATE: "Farlite" thermosetting plastic $\frac{1}{16}$ " thick x $1\frac{3}{4}$ " diameter; shaft hole $\frac{5}{8}$ " (0.625"); engraved 0-100 over 270° arc; mounting holes drilled per drawing.	Dial plate		Dwg. NL-201356-2-3
O-616	#	DIAL PLATE: "Farlite" thermosetting plastic $\frac{1}{16}$ " thick x $1\frac{3}{4}$ " diameter; shaft hole $\frac{5}{8}$ " (0.625"); engraved 1 to 9 inclusive over 160° arc; mounting holes drilled per drawing.	Dial plate		Dwg. NL-201356-2-4
R-601	3RC30BF513J	RESISTOR: fixed; 51,000 ohms; $\pm 5\%$; 1 watt; composition resistors; insulated; overall dimensions 0.280" diameter x 0.718" long; $1\frac{1}{2}$ " wire leads out ends of resistor; Standard RMA color code.	Mixer grid load	RC30BF513J	C75.7-1943
R-602		RESISTOR: same as ref R-601.	Oscillator grid leak		

R-603	3RC30BF242J	RESISTOR: fixed; 2400-ohm; $\pm 5\%$; 1-watt; composition; insulated; overall dimensions 0.280" diameter x 0.718" long; 1½" wire leads out ends of resistor; Standard RMA color code.	Voltage dropping	RC30BF242J	C75.7-1943
R-604	3RC30BF243J	RESISTOR: fixed; 24,000-ohm; $\pm 5\%$; 1-watt; composition; insulated; overall dimensions 0.280" diameter x 0.718" long; 1½" wire leads out ends of resistor; standard RMA color code.	Mixer screen decoupling	RC30BF243J	C75.7-1943
R-605	3RC30BF102K	RESISTOR: fixed; 1000-ohm; $\pm 10\%$; 1-watt; composition; insulated; overall dimensions 0.280" diameter x 0.718" long; 1½" wire leads out ends of resistor; standard RMA color code.	Mixer plate decoupling	RC30BF102K	C75.7-1943
R-606	3RC30BF511J	RESISTOR: fixed; 510-ohm; $\pm 5\%$; 1-watt; composition; insulated; overall dimensions 0.280" diameter x 0.718" long; 1½" wire leads out ends of resistor; standard RMA color code.	Mixer plate decoupling	RC30BF511J	C75.7-1943
R-607	3RC30BF105K	RESISTOR: fixed; 1 megohm; $\pm 10\%$; 1-watt; composition resistor; insulated; overall dimensions 0.280" diameter x 0.718" long; 1½" wire leads out ends of resistor; standard RMA color code.	AVC decoupling	RC30BF105K	C75.7-1943
R-608	2ZK7263-20	POTENTIOMETER: gain control; 500,000 ohm; $\pm 15\%$ carbon element, linear taper; 1 watt; shaft ¼" diameter x ⅜" long beyond bushing; bushing ⅜" diameter x ¼" long measured from highest point on face with locating tab out of the way; complete with ⅜" x 32 thread hex. nut and locking washer; no flat on shaft; three lug type terminals outside no taps; temperature range -55°F (-67°F) to +71.1°C (+167°F).	I-F gain control		
R-609	3RC30BF104K	RESISTOR: fixed; 100,000-ohm; $\pm 10\%$; 1-watt; composition resistor; insulated; overall dimensions 0.280" diameter x 0.718" long; 1½" wire leads out ends of resistor; standard RMA color code.	1st i-f grid decoupling	RC30BF104K	C75.7-1943
R-610		RESISTOR: same as ref R-609.	Boas voltage divider		
R-611	3RC30BF106K	RESISTOR: fixed; 10-megohm; $\pm 10\%$; 1 watt; composition; resistor; insulated; overall dimensions 0.280" diameter x 0.718" long; 1½" wire leads out ends of resistor; standard RMA color code.	Grid of 1st a-f amplifier	RC30BF106K	C75.7-1943
R-612	3RC30BF514J	RESISTOR: fixed; 510,000 ohm; $\pm 10\%$; 1-watt; composition resistor; insulated; overall dimensions 0.280" diameter x 0.718" long; 1½" wire leads out ends of resistor; standard RMA color code.	Bias voltage divider	RC30BF514J	C75.7-1943
R-613		RESISTOR: same as ref. R-605.	1st i-f plate decoupling		
R-614	3RC30BF394K	RESISTOR: fixed; 390,000-ohm; $\pm 10\%$; 1-watt; composition resistor; insulated; overall dimensions 0.280" diameter x 0.718" long; 1½" wire leads out ends of resistor; standard RMA color code.	Bias voltage divider	RC30BF394K	C75.7-1943
R-615		RESISTOR: same as ref R-609	2nd i-f grid decoupling		

Model: Radio Set AN/CRN-10 **TABLE OF REPLACEABLE PARTS (Cont'd)** **Major Assembly: Course Detector TS-179/CRN-10 (Portable)**

Reference Symbol	Army Stock Number Navy Stock Number British Ref Number	Name of Part and Description	Function	Mfr. and Desig. or Standard Type	Contr or Gout Dwg or Spec. No.
R-616	3RC30BF244J	RESISTOR: fixed; 240,000-ohm; $\pm 5\%$; 1-watt; composition resistor; insulated; overall dimensions 0.280" diameter x 0.718" long; $1\frac{1}{2}$ " wire leads out ends of resistor; standard RMA color code.	Meter multiplier	RC30BF244J	C75.7-1943
R-617	3RC30BF153J	RESISTOR: fixed; 15,000-ohm; $\pm 5\%$; 1-watt; composition resistor; insulated; overall dimensions 0.280" diameter x 0.718" long; $1\frac{1}{2}$ " wire leads out ends of resistor; standard RMA color code.	Meter multiplier	RC30BF153J	C75.7-1943
R-618	3RC30BF105J	RESISTOR: fixed; 1-megohm; $\pm 5\%$; 1-watt; composition resistor; insulated; overall dimensions 0.280" diameter x 0.718" long; $1\frac{1}{2}$ " wire leads out ends of resistor; standard RMA color code.	Meter multiplier	RC30BF105J	C75.7-1943
R-619		RESISTOR: same as ref R-617.	Meter multiplier		
R-620		RESISTOR: same as ref R-605.	2nd i-f plate decoupling		
R-621		RESISTOR: same as ref R-607.	1st a-f gain		
R-622	2ZK7263-19	POTENTIOMETER: audio gain; 100,000 ohms; $\pm 15\%$; carbon element; linear taper; 1 watt; shaft $\frac{1}{4}$ " diameter x $\frac{3}{8}$ " long beyond bushing; bushing $\frac{3}{8}$ " diameter x $\frac{1}{4}$ " long measured from highest point on face with locating tab out of the way; complete with $\frac{3}{8}$ " x 32 thread hex. nut and locking washer; no flat on shaft; three lug type terminals outside; no taps.	Audio gain control		AN-QQ-S-91
R-623	3RC30BF305J	RESISTOR: fixed; 3-megohm; $\pm 5\%$; 1-watt; composition resistor; insulated; overall dimensions 0.280" diameter x 0.718" long; $1\frac{1}{2}$ " wire leads out ends of resistor; standard RMA color code.	Screen of 1st amplifier	RC30BF305J	C75.7-1943
R-624	2ZK7263-18	POTENTIOMETER: meter multiplier; 25,000 ohms; $\pm 15\%$; carbon element; linear taper; 1-watt; shaft $\frac{1}{4}$ " diameter x $\frac{3}{4}$ " long beyond bushing; bushing $\frac{3}{8}$ " diameter x $\frac{1}{4}$ " long measured from highest point on face with locating tab out of the way; complete with $\frac{3}{8}$ " x 32 thread hex. nut and locking washer; no flat on shaft; three lug type terminals outside; no taps.	Meter multiplier		
R-625		RESISTOR: same as ref R-607.	1st a-f plate load		
R-626		RESISTOR: same as ref R-609.	2nd a-f grid decoupling		
R-627		RESISTOR: same as ref R-623.	2nd audio feedback		

R-628	RESISTOR: same as ref R-607.	2nd a-f grid		
R-629	RESISTOR: fixed: 1000-ohm; $\pm 5\%$; 1-watt; composition; insulated; overall dimensions 0.280" diameter x 0.718" long; $1\frac{1}{2}$ " wire leads out ends of resistor; RMA color code.	Load on filter output	RC30BF102J	C75.7-1943
R-630	RESISTOR: same as ref R-605.	Load on filter output		
R-631	ATTENUATOR: variable; filter equalizer; 2000 ohms; $\pm 30\%$; per element; L-Pad attenuator; carbon element; attenuation linear; 1 watt; 35 DB attenuation; shaft $\frac{1}{4}$ " diameter x $\frac{1}{8}$ " long beyond bushing; $\frac{3}{8}$ "-32 threaded bushing $\frac{1}{2}$ " long; overall dimension of unit $1\frac{3}{4}$ " long x $1\frac{13}{32}$ "; complete with one mounting nut, one locking nut and one shakeproof washer, two connection lugs per resistance element.	Filter equalizer	AB Type JJ	AB Dwg. No. Y-5489-D
R-632	RESISTOR: same as ref R-606.	Load on filter output		
R-633	RESISTOR: same as ref R-616.	Meter multiplier		
S-601	SWITCH: toggle; SPDT; 2 positions; 1 ampere at 250 volts; 3 amperes at 125 volts contact rating; overall dimensions $1\frac{3}{8}$ " x $1\frac{5}{8}$ "; mounting dimensions $\frac{3}{4}$ " x $1\frac{5}{8}$ "; bushing mounted; without position indicating plate; bushing $1\frac{5}{32}$ "-32 thread x $\frac{1}{4}$ " long; lug type terminals.	AVC-MVC	H&H	AN-QQ-S-91
S-602	SWITCH: toggle; DPST; 2 positions; 1 ampere at 250 volts, 3 amperes at 125 volts contact rating; overall dimensions $1\frac{3}{8}$ " x $\frac{3}{4}$ " x $1\frac{5}{8}$ "; mounting dimensions $\frac{3}{4}$ " x $1\frac{5}{8}$ "; bushing mounted; without position indicating plate; bushing $1\frac{5}{32}$ "-32 thread x $\frac{1}{4}$ " long; lug type terminals.	Battery switch	H&H	Spec. NL-200650-1 Dwg. NL-200649-1-2
S-603	SWITCH: rotary; 2 circuit; 9 position; no rated current carrying capacity; bakelite insulation; insulation break-down voltage 1100 rms to ground; overall dimensions $1\frac{1}{2}$ " x $1\frac{5}{8}$ " diameter; mounting dimensions $1\frac{5}{8}$ " diameter, bushing mounted; non-shorting; $\frac{3}{8}$ " diameter bushing $\frac{7}{32}$ " long measured from the highest projection on face of switch with stop disc removed; $\frac{1}{4}$ " diameter shaft $\frac{3}{8}$ " long from snap ring on shaft; shaft has one flat located opposite fixed stop of the switch with switch in position 6; i.e., five steps from extreme counterclockwise position; position of flat on shaft to be correct to ± 3 degrees; lug type terminals around periphery of each section.	Meter switch	Similar to MAL No. 3229-1	Modified by Mallory Dwg. B-115959

TABLE OF REPLACEABLE PARTS (Cont'd)

Model: Radio Set AN/CRN-10

Major Assembly: Course Detector TS-179/CRN-10 (Portable)

Reference Symbol	Army Stock Number Navy Stock Number British Ref Number	Name of Part and Description	Function	Mfr. and Desig. or Standard Type	Contr or Govt Dwg or Spec. No.
T-601	2ZK9643.16	TRANSFORMER: intermediate frequency; interstage; operating frequency 10.25 megacycles; solenoid wound; on $\frac{1}{16}$ " coil form; primary 15 turns No. 34 enamelled wire; secondary 15 turns No. 34 enamelled wire; pitch 54 turns per inch; air (no core) inductance 2.4 microhenries; Q equals 107 (with shield) at 10.25 megacycles; windings impregnated and flash dipped in Zophar No. 1584 wax; core of Sickles No. 31-3289; spacing between windings $1\frac{1}{32}$ " $\pm 1\frac{1}{64}$ "; overall dimensions of transformer 4" high x $1\frac{1}{8}$ " square; mounting area $1\frac{1}{2}$ " x $1\frac{1}{16}$ "; mounted by two 6-32 machine screws; four labelled terminals out bottom of transformer; band width 200 kilocycles; peak operating voltage 90 volts d-c plus 20 volts a-c superimposed.	1st i-f transformer	SK	Spec. RA-6469-1 Dwg. RA-6465-1-1
T-602		TRANSFORMER: same as ref T-601.	2nd i-f transformer		
T-603	2ZK9643.15	TRANSFORMER: intermediate frequency; diode; operating frequency 10.25 megacycles; solenoid wound on $\frac{1}{16}$ " tube coil form; primary 15 turns No. 34 enameled wire; secondary 15 turns No. 34 enameled wire; pitch 54 turns per inch; air (no core) inductance 2.4 microhenries; Q equals 107 (with shield) at 10.25 megacycles; windings impregnated and flash dipped in Zophar No. 1584 wax; core of Sickles No. 31-3289; spacing between windings $\frac{9}{16}$ " $\pm \frac{1}{64}$ "; overall dimensions of transformer 4" high x $1\frac{1}{2}$ " square; mounting area $1\frac{1}{2}$ " x $1\frac{1}{16}$ "; mounted by two 6-32 machine screws; four labelled terminals out bottom of transformer; band width 200 kilocycles; peak operating voltage 90 volts d-c plus 20 volts a-c superimposed.	Diode i-f transformer	SK	Spec. RA-6469-1 Dwg. RA-6465-1-2
V-601		TUBE: JAN-957; (VT-237) commercial 957.	Oscillator	RCA	
V-602		TUBE: JAN-1R5; (VT-171) commercial 1R5.	Mixer	RCA	
V-603		TUBE: JAN-1LN5; (VT-179) commercial 1LN5.	RCA		
V-604		TUBE: same as ref V-603.	2nd i-f amplifier		
V-605		TUBE: JAN -1S5; (VT-172) commercial 1S5.	Detector a-f amplifier	RCA	
V-606		TUBE: JAN-3S4; (VT-174) commercial 3S4.	A-F output	RCA	
X-601	2ZK8678.34	TUBE SOCKET: Locktal; silver plated bronze or Beryllium copper contacts; overall dimensions $1\frac{1}{16}$ " x $1\frac{1}{16}$ " x $\frac{3}{4}$ "; low loss, laminated bakelite insulation.		CMC No. 6955	Spec. NL-200610-1 Dwg. NL-200638-1

X-602	2ZK8669-9	TUBE SOCKET: miniature 7 prong; silver plated bronze or Beryllium copper contacts; overall dimensions $1\frac{1}{8}"$ x $\frac{3}{4}"$ x $11\frac{1}{16}"$ bakelite insulation.	Hold tube	Spec. NL-200610-1 Dwg. NL-200624-1-1
X-603		TUBE SOCKET: same as ref X-602.	Hold tube	
X-604	2Z8761.1	TUBE SOCKET: acorn 5 contact; silver plated bronze or Beryllium copper contacts; diameter of ceramic $1\frac{1}{32}"$; height over contacts $1\frac{1}{32}"$.	Hold tube	Spec. NL-200610-1 Dwg. NL-200637-1
Z-601		FILTER: 150 cycle band-pass; impedance ratio of 10,000 ohms; 1000 ohms at 150 cycles per second; component transformer; coils and capacitors impregnated and potted in case; metal case $1\frac{23}{32}"$ x $3\frac{3}{4}"$ x $3\frac{1}{4}"$; gray painted; four solder lug terminals on bottom; d-c resistance between terminals 1 and 2-177 ohms; between 3 and 4 equals 10,000 ohms; panel mounting by machine screws which fasten into tapped inserts on side of case.	150 cycle filter	WE No. KS-8727
Z-602		FILTER: 90 cycle band-pass; impedance ratio 10,000 ohms; 1500 ohms at 90 cycles per second; component transformer; coils and capacitors impregnated and potted in case; metal case $1\frac{23}{32}"$ x $3\frac{3}{4}"$ x $3\frac{1}{4}"$; gray painted; four solder lug terminals on bottom; d-c resistance between terminals 1 and 2-177 ohms; 3 and 4-10,000 ohms; panel mounting by screws which fasten into tapped inserts on side of case.	90 cycle filter	WE No. KS-8726
Model: Radio Set AN/CRN-10				Major Assembly: Voltmeter IS-176-B
701-799 Series		VOLTMETER IS-176-B: r-f; unbalanced; housed in steel case $3\frac{1}{2}"$ x $3\frac{1}{2}"$ x $3\frac{1}{2}"$ to which is attached a probe tip assembly $6\frac{1}{8}"$ long x $\frac{7}{8}"$ x $\frac{3}{4}"$ is attached to the case; the meter is mounted on the front panel and is equipped with a plastic guard disc; the tuning control is mounted on the left side; overall dimensions: $4\frac{3}{4}"$ deep x $4\frac{1}{4}"$ wide x $16"$ long.		
A-701	2ZK11105	TUBE ASSEMBLY: $\frac{7}{8}"$ outside diameter x $18"$ (0.043) B & S gauge wall hard-drawn seamless brass tubing $6"$ long with flange of $1\frac{1}{2}"$ diameter free turning brass rod; probe end insulator of "Polystyrene", 0.770" diameter x $\frac{1}{4}"$ thick; all metal surfaces silver plated .0005".	F	Dwg. NL-201719-2

TABLE OF REPLACEABLE PARTS (Cont'd)

Model: Radio Set AN/CRN-10

Major Assembly: Voltmeter IS-176-B

Reference Symbol	Army Stock Number Navy Stock Number British Ref Number	Name of Part and Description	Function	Mfr. and Desig. or Standard Type	Contr or Govt Dwg or Spec. No.
C-701	3DK9001V-2	CAPACITOR: variable; air dielectric prove-tip assembly; consisting of a $1\frac{3}{8}$ " long piece of 1" OD x No. 14 (0.069) B & S gauge wall hard-drawn brass tube with a $\frac{5}{16}$ " x $\frac{1}{8}$ " thick piece of free turning brass rod silver-soldered to the outside at one end of the tube; both brass rod and tube wall drilled and tapped for No. 6-32 machine screw; a probe-tip insert of $\frac{1}{4}$ " x .879" diameter unplasticized di-lectene, drilled and tapped for No. 6-32 machine screw with hole countersunk $\frac{3}{8}$ " diameter at 82° is riveted to the end opposite drilled and tapped hole; insert is secured to tube by three $\frac{1}{16}$ " diameter x $\frac{3}{16}$ " long brass pins set around the tube at 120° spacing; a free turning brass rod with $\frac{1}{16}$ " diameter x $\frac{1}{8}$ " long knurled head and 6-32 threaded screw $\frac{5}{16}$ " long; a probe tip of No. 6-32 flat head brass machine screw $\frac{1}{8}$ " long with thread cut off and diameter reduced to 0.093" for aidance of $\frac{5}{8}$ " from the end; all metal parts silver plated 0.0005" thick.	Coupling	F	Dwg. NL-201666-1
C-702	3DK9025V-39	CAPACITOR: variable; air dielectric; maximum capacity 25 mmf; minimum capacity 2 mmf; single section; 7 plates of silver plated brass spaced 0.030"; 1000 volts rms 60 cycle a-c breakdown; ceramic insulation; no trimmers; sleeve-type front bearing; shaft $\frac{1}{4}$ " in diameter by $\frac{3}{8}$ " long beyond bushing; $\frac{3}{8}$ "-32 threaded bushing $\frac{9}{16}$ " long.	Tuning		Dwg. F-29168-12 F-27050-12-17
E-701	2ZK9401.17	INSULATOR ASSEMBLY: $\frac{1}{8}$ " thick "Polystyrene" $\frac{3}{8}$ " wide x $2\frac{3}{8}$ " long with shakeproof terminal eyelet and holes drilled per drawing.		F	Dwg. NL-201726-1
L-701		COIL: r-f tank; $2\frac{1}{4}$ " turns No. 13 (0.072) B & S gauge bare copper wire silver plated and coated with clear lacquer; coil $\frac{3}{8}$ " inside diameter x $\frac{1}{2}$ " long; one coil end bent out parallel to axis of coil for a distance of $\frac{3}{8}$ " then bent toward center line of coil at an angle of approximately 37 degrees and extended for a distance of $\frac{7}{8}$ "; air core; coil mounted by soldering leads to condenser; resonant frequency above 75 megacycles; inductance 0.09 microhenries; rated current 5.2 amperes.	Tank		Dwg. NL-201747-1
M-701		METER: radio-frequency milliammeter; 0-120 milliamperes scale; flush panel mounting; bakelite case; body diameter $2\frac{3}{4}$ "; flange diameter $3\frac{1}{2}$ " maximum; depth behind flange including terminal studs $1\frac{1}{8}$ "; calibrated by manufacturer to operate when mounted in a steel panel; calibrated in milliamperes direct; moisture and fungus resistant.	Detector	MR34W120RFMA	C39-2-1943
N-701	#	NAME PLATE (Tuning): "Farlite" thermo setting plastic; dimensions $1\frac{1}{8}$ " x $\frac{7}{16}$ " x $\frac{1}{16}$ ".	Identify dial	F	Dwg. NL-201547-1-1
N-702	#	NAMPLATE (Dial): "Farlite" thermo setting plastic; dimension $1\frac{3}{4}$ " diameter.	Identify dial	F	Dwg NL-201356-2-1

N-703	#	NAME PLATE (IS-176-B): No. 20 (0.032) GA 2S 1/2 H Sheet Aluminum; dimensions 3 1/8" x 1 3/8".	Identify apparatus	F	Dwg. RA-4720-3-2
O-701	2ZK5788-27	DIAL KNOB ASSEMBLY: black bakelite Grade XX; insert cold rolled steel 3/8" long; outside diameter 0.437" before knurling; inside diameter 0.252"; overall knob dimensions 1 1/8" long x 1 1/16" wide x 1/2" high.	Control knob	F	Dwg. NL-201348-1
Model: Radio Set AN/CRN-10					
Major Assembly: Antenna System AS-156/CRN-10					
801-899 Series	2A249-156	ANTENNA SYSTEM AS-156/CRN-10: consists of an antenna array system, antenna tuning unit, and necessary radio frequency cords; antenna array system, 41 feet long assembled, may be disassembled for transport on Trailer V-6/CRN-10; all other components are similarly packed for transport.			
AS-801	2A249-1F	ANTENNA AS-155/CRN-10; folded dipole type with director; trombone type radiating elements, factory adjusted and riveted in place; framework and radiating elements of aluminum; overall dimension approximately 37" long x 30" wide x 2 1/4" deep; finish olive drab; complete with the following AN type fittings.	Carrier antenna		Dwg. RA-4255-14
AS-801A	2Z3064-10	RECEPTACLE: die cast aluminum shell; overall dimensions 1 3/8" x 1 3/8" x 2 3/8" (over shell); four mounting holes on 3/8" x 3/8" centers; male low loss bakelite insert; 3 No. 16 contacts; contact spacing 1/8"; threaded section 4 1/64" long; 1"-20 thick; shell finish fine grain metallic sand blast satin.	Electrical connection	APH AN3102-16S-5ST	
AS-801B	2Z1612-22	CAP AND CHAIN: die cast aluminum shell; overall dimensions 1 1/8" diameter x 9/16" long; internal threads 1"-20 fits No. 16 and 16S connectors; finish fine grain metallic sand blast satin; shoulder type rivet for chain connections; complete with rubber gasket.	Receptacle protection	APH 9760-16	
AS-801C		BUSHING: radiator feed through; "Natite" No. 150; overall dimensions 1 3/8" diameter x 1 1/8" long; shoulder 1 1/16" long; insert portion 2 3/8" long; axially located hole 0.250" diameter external finish brown glaze; must nest with ref Symbol AS-801D.	Feed through insulator		Dwg. RA-4267-2-1
AS-801D		BUSHING: radiator feed through; "Natite" No. 150; overall dimension 1 1/8" diameter x 2" long; hole for insert 7/8" diameter; axially located hole 0.250" diameter; external finish brown glaze; must nest with ref Symbol AS-801C.	Feed through insulator		Dwg. RA-4267-2-2
A-802		ANTENNA AS-155/CRN-10: same as ref AS-801.	Sideband antenna		
AS-803		ANTENNA AS-155/CRN-10: same as ref AS-801.	Sideband antenna		
AS-804		ANTENNA AS-155/CRN-10: same as ref AS-801.	Sideband antenna		

TABLE OF REPLACEABLE PARTS (Cont'd)

Model: Radio Set AN/CRN-10

Major Assembly: Antenna System AS-156/CRN-10

Reference Symbol	Army Stock Number Navy Stock Number British Ref Number	Name of Part and Description	Function	Mfr. and Desig. or Standard Type	Contr or Govt Dwg or Spec. No.
AS-805		ANTENNA AS-155/CRN-10: same as ref AS-801.	Sideband antenna		
AS-806		ANTENNA AS-155/CRN-10: same as ref AS-801.	Sideband antenna		
AS-807		ANTENNA AS-155/CRN-10: same as ref AS-801.	Sideband antenna		
MT-801		MAST: tubular type; aluminum; 1" OD tubing x 22 $\frac{3}{8}$ " length with 3 $\frac{5}{8}$ " by 1 $\frac{1}{2}$ " x $\frac{1}{8}$ " flange plate on each end; each end equipped with 2 locating pins and 2 captive wing bolts; overall dimensions 22 $\frac{5}{8}$ " long x 3 $\frac{5}{8}$ " wide x 1 $\frac{1}{2}$ " deep; wing bolts $\frac{1}{4}$ -20 thread x 1" long.			Dwg. RA-4273-12
N-801	#	NAME PLATE (Red): No. 20 (0.032) GA 2S $\frac{1}{4}$ — $\frac{1}{2}$ H Sheet Aluminum; dimensions 1 $\frac{3}{8}$ " x $\frac{5}{16}$ " x $\frac{1}{16}$ ".	Identify beam		Dwg. RA-5532-1-1
N-802	#	NAME PLATE (Orange): No. 20 (0.032) GA 2S $\frac{1}{4}$ — $\frac{1}{2}$ H Sheet Aluminum; dimensions 1 $\frac{3}{8}$ " x $\frac{5}{16}$ " x $\frac{1}{16}$ ".	Identify beam		Dwg. RA-5532-1-2
N-803	#	NAME PLATE (Yellow): No. 20 (0.032) GA 2S $\frac{1}{4}$ — $\frac{1}{2}$ H Sheet Aluminum; dimensions 1 $\frac{3}{8}$ " x $\frac{5}{16}$ " x $\frac{1}{16}$ ".	Identify beam		Dwg. RA-5532-1-3
N-804	#	NAME PLATE (Green): No. 20 (0.032) GA 2S $\frac{1}{4}$ — $\frac{1}{2}$ H Sheet Aluminum; dimensions 1 $\frac{3}{8}$ " x $\frac{5}{16}$ " x $\frac{1}{32}$ ".	Identify beam		Dwg. RA-5532-1-4
N-805	#	NAME PLATE (Blue): No. 20 (0.032) GA 2S $\frac{1}{4}$ — $\frac{1}{2}$ H Sheet Aluminum; dimensions 1 $\frac{3}{8}$ " x $\frac{5}{16}$ " x $\frac{1}{32}$ ".	Identify beam		Dwg. RA-5532-1-5
N-806	#	NAME PLATE (Black): No. 20 (0.032) GA 2S $\frac{1}{4}$ — $\frac{1}{2}$ H Sheet Aluminum; dimensions 1 $\frac{3}{8}$ " x $\frac{5}{16}$ " x $\frac{1}{32}$ ".	Identify beam		Dwg. RA-5532-1-6
N-807	#	NAME PLATE (Red, CG-152/CRN-10): No. 20 (0.032) GA 2S $\frac{1}{4}$ — $\frac{1}{2}$ H Aluminum; dimensions 3 $\frac{1}{4}$ " x $\frac{3}{8}$ " x $\frac{1}{32}$ ".	Identify cable		Dwg. RA-5578-2-1
N-808	#	NAME PLATE (Yellow, CG-152/CRN-10): No. 20 (0.032) GA 2S $\frac{1}{4}$ — $\frac{1}{2}$ H Aluminum; dimensions 3 $\frac{1}{4}$ " x $\frac{3}{8}$ " x $\frac{1}{32}$ ".	Identify cable		Dwg. RA-5578-2-2
N-809	#	NAME PLATE (Blue, CG-152/CRN-10): No. 20 (0.032) GA 2S $\frac{1}{4}$ — $\frac{1}{2}$ H Aluminum; dimensions 3 $\frac{1}{4}$ " x $\frac{3}{8}$ " x $\frac{1}{32}$ ".	Identify cable		Dwg. RA-5578-2-3
N-810	#	NAME PLATE (Black, CG-152/CRN-10): No. 20 (0.032) GA 2S $\frac{1}{4}$ — $\frac{1}{2}$ H Aluminum; dimensions 3 $\frac{1}{4}$ " x $\frac{3}{8}$ " x $\frac{1}{32}$ ".	Identify cable		Dwg. RA-5578-2-4

N-811	#	NAME PLATE (Red, CG-152/CRN-10); No. 20 (0.032) GA 2S 1/4—1/2 H Aluminum; dimensions 3 1/4" x 3/8" x 1/32".	Identify cable	Dwg. RA-5578-2-9
N-812	#	NAME PLATE (Yellow, CG-152/CRN-10); No. 20 (0.032) GA 2S 1/4—1/2 H Aluminum; dimensions 3 1/4" x 3/8" x 1/32".	Identify cable	Dwg. RA-5578-2-10
N-813	#	NAME PLATE (Blue, CG-152/CRN-10); No. 20 (0.032) GA 2S 1/4—1/2 H Aluminum; dimensions 3 1/4" x 3/8" x 1/32".	Identify cable	Dwg. RA-5578-2-11
N-814	#	NAME PLATE (Nameplate, AS-156/CRN-10); No. 20 (0.032) GA 2S 1/4—1/2 H Aluminum; dimensions 3 1/4" x 1 3/16" x 1/16".	Identify apparatus	Dwg. RA-4270-3-8
N-815	#	NAME PLATE: same as ref N-811.		
N-816	#	NAME PLATE: same as ref N-812.		
N-817	#	NAME PLATE: same as ref N-813.		
N-818	#	NAME PLATE: same as ref N-814.		
N-819	#	NAME PLATE: same as ref N-815.		
N-820	#	NAME PLATE: same as ref N-816.		
N-821	#	NAME PLATE: same as ref N-817.		
N-822	#	NAME PLATE: No. 20 (0.032) GA 2S 1/4—1/2 H Aluminum; dimensions 3 1/4" x 3/8" x 1/32".	Identify	Dwg. RA-5578-2-5
N-823	#	NAME PLATE: No. 20 (0.032) GA S2 1/4—2S 1/4—1/2 H Aluminum; dimensions 3 1/4" x 3/8" x 1/32".	Identify	Dwg. RA-5578-2-6
O-801	2A264-155/B1	GUIDE BLOCK: 5/8" thick Lustron or Styramic overall dimensions 3 3/8" long x 5/8" wide x 1 3/8" deep; cut and drilled per drawing.	Guide block antenna tuning unit	Dwg. RA-4573-1
O-802	2A264-155/G1	GASKET: No. 24 (0.032) soft copper sheet; overall dimensions 1 5/16" x 1 5/16"; centrally located hole 29/32" diameter; four No. 31 (0.120) holes on 0.968" centers; finish dull white nickel plate 0.0005".	Connector gasket	Dwg. RA-4261-1
T-801		TRANSFORMER: r-f; Antenna Tuning Unit TN-71/CRN-10; consists of aluminum case 32 15/16" long x 17 1/4" high x 11 1/4" wide; housing pre-tuned transmission network; folding supporting feet; carrying handles; complete with the following AN type fittings.	Antenna tuning	Dwg. RA-6761-26
T-801A		RECEPTACLE: die-cast aluminum shell; overall dimensions 1 9/16" x 1 9/16" x 29/32" (over shell); four mounting holes on 3/16" x 3/16" centers; male low-loss bakelite insert; three No. 16 contacts; contact spacing 1/8"; threaded section 1/4" long; 1"-20 thread; shell finish fine grain metallic sand blast satin.	Electrical connection	APH AN3102-16S-5ST

Model: Radio Set AN/CRN-10 **TABLE OF REPLACEABLE PARTS (Cont'd)** **Major Assembly: Antenna System AS-156/CRN-10**

Reference Symbol	Army Stock Number Navy Stock Number British Ref Number	Name of Part and Description	Function	Mfr. and Desig. or Standard Type	Contr or Govt Dwg or Spec. No.
T-801B		CAP AND CHAIN: die-cast aluminum shell; overall dimensions $1\frac{1}{8}$ " diameter x $\frac{9}{16}$ " long; internal threads 1"-20; fits No. 16 and 16S connectors; finish fine grain metallic sand blast satin; shoulder type rivet for chain connection; complete with rubber gasket.	Receptacle protection	APH 9760-16	
W-801	#	CORD CG-154/CRN-10 (47'-9"); assembly consisting of:	Carrier feeder		Dwg. RA-4256-12-1
W-801A	2Z3029-7	PLUG: die cast aluminum shell; overall dimensions $1\frac{1}{16}$ " diameter x $1\frac{1}{8}$ " long; low loss bakelite insert; male contact 3 No. 16 contact spacing $\frac{1}{8}$ "; threaded section $\frac{7}{8}$ "-20; shell finish fine grain metallic sand blast.	Circuit connection	APH AN3106-16S-5PT	AN-W-C-591
W-801B	2Z2636-1	CABLE CLAMP: die cast aluminum shell; overall dimensions $1\frac{1}{16}$ " diameter x $1\frac{1}{8}$ " long; threaded $\frac{7}{8}$ "-20; fits No. 16 and 16S shell; maximum cable OD $\frac{5}{8}$ "; finish fine grain metallic sand blast satin.	Clamp cable to connector	APH AN3057-8	
W-801C		ADAPTER: split; extra heavy $\frac{3}{8}$ " I.P.S. seamless brass pipe; max. OD $1\frac{1}{16}$ " on flare; normal OD $\frac{9}{16}$ "; $\frac{7}{8}$ " long; cadmium plated 0.0005" thick.	Adapts cable to cable clamp		Dwg. RA-4251-1
W-801D	2Z3062-26	ANGLE PLUG: die cast aluminum shell; overall dimensions $2\frac{1}{16}$ " x $2\frac{3}{4}$ " x $1\frac{1}{32}$ " diameter low loss bakelite insert ferrule; contacts 2 No. 12; contact spacing $\frac{1}{8}$ "; threaded section $1\frac{3}{16}$ "-18; coupling ring threads $1\frac{3}{8}$ "-18; shell finish fine grain metallic sand blast.	Circuit connection	APH AN3108-22-SST	AN-W-C-591
W-801E	6Z149-3	ADAPTER: die cast aluminum shell; overall dimensions $1\frac{5}{16}$ " diameter x $2\frac{7}{16}$ " long; internal threads $1\frac{1}{16}$ " x 18; external threads $\frac{7}{8}$ "-20; fits $\frac{1}{2}$ " outside diameter conduit and No. 20 and 22 connectors; finish fine grain metallic sand blast.	Adapts connector to angle plug	APH AN3055-22-8	
W-801F	2Z1619-10	CAP AND CHAIN: die cast aluminum shell; overall dimensions 1" diameter x $\frac{3}{4}$ " long; threaded 1-20; fits No. 16 and 16S connector; finish fine grain metallic sand blast satin; shoulder type rivet for chain connection; complete with rubber gasket.	Receptacle protection	APH 9760-16P	
W-801G	2Z1612-9	CAP AND CHAIN: die cast aluminum shell; overall dimensions $1\frac{3}{8}$ " diameter x $\frac{15}{16}$ " long; threaded $1\frac{3}{8}$ "-18; fits No. 22 connectors; finish fine grain metallic sand blast satin; shoulder type rivet for chain connection; complete with rubber gasket.	Receptacle protection	APH 9760-22P	
W-801H		RADIO FREQUENCY CABLE RG-22/U; 2 conductor type; length 47'-9".	R-F conductor		Dwg. RA-4656-2-5
W-802	2A249-156	CORD CG-152/CRN-10: (34'-2"); assembly consisting of:	Sideband antenna feeder		Dwg. RA-4257-2-1

W-802A	PLUG: die cast aluminum shell; overall dimensions $1\frac{3}{16}$ " diameter x $1\frac{3}{8}$ " long; low loss bakelite insert; male contacts 3 No. 16; contact spacing $\frac{1}{8}$ "; threaded section $\frac{7}{8}$ "-20; shell finish fine grain metallic sand blast satin.	Electrical connection	APH AN3106-16S-5PT	AN-W-C-591
W-802B	CABLE CLAMP: die cast aluminum shell; overall dimensions $1\frac{1}{16}$ " diameter x $1\frac{1}{8}$ " long; threaded $\frac{7}{8}$ "-20; fits No. 16 and 16S shell; maximum cable OD $\frac{9}{8}$ "; finish fine grain metallic sand blast satin.	Clamp cable to connector	APH AN3057-8	
W-802C	CAP AND CHAIN: die cast aluminum shell; overall dimensions 1" diameter x $\frac{3}{4}$ " long; threaded 1-20; fits No. 16 and 16S connector; finish fine grain metallic sand blast satin; shoulder type rivet for chain connection; complete with rubber gasket.	Receptacle protection	APH 9760P-16	
W-802D	ADAPTER: split; extra heavy $\frac{3}{8}$ " I.P.S. seamless brass pipe; max. OD $1\frac{1}{16}$ " on flare; normal OD $\frac{9}{8}$ "; $\frac{1}{8}$ " long; cadmium plated 0.0005" thick.	Adapts cable to cable clamp		Dwg. RA-4251-1
W-802E	RADIO FREQUENCY CABLE: RG-22/U; 2 conductor; length 34'-2".	R-F conductor		Dwg. RA-4656-2-1
W-803	CORD CG-152/CRN-10: same as ref W-802.	Sideband antenna feeder		
W-804	CORD CG-152/CRN-10: (28'-3") assembly consisting of:	Sideband antenna feeder		Dwg. RA-4257-2-2
W-804A	PLUG: die cast aluminum shell; overall dimensions $1\frac{3}{16}$ " diameter x $1\frac{3}{8}$ " long; low loss bakelite insert; male contacts 3 No. 16; contact spacing $\frac{1}{8}$ "; threaded section $\frac{7}{8}$ "-20; shell finish fine grain metallic sand blast satin.	Electrical connection	APH AN3106-16S-5PT	AN-W-C-591
W-804B	CABLE CLAMP: die cast aluminum shell; overall dimensions $1\frac{1}{16}$ " diameter x $1\frac{1}{8}$ " long; threaded $\frac{7}{8}$ "-20; fits No. 16 and 16S shell; maximum cable OD $\frac{9}{8}$ "; finish fine grain metallic sand blast satin.	Clamp cable to connector	APH AN3057-8	
W-804C	CAP AND CHAIN: die cast aluminum shell; overall dimensions 1" diameter x $\frac{3}{4}$ " long; threaded 1-20; fits No. 16 and 16S connector; finish fine grain metallic sand blast satin; shoulder type rivet for chain connection; complete with rubber gasket.	Receptacle protection	APH 9760P-16	
W-804D	ADAPTER: split; extra heavy $\frac{3}{8}$ " I.P.S. seamless brass pipe; max. OD $1\frac{1}{16}$ " on flare; normal OD $\frac{9}{8}$ "; $\frac{1}{8}$ " long; cadmium plated 0.0005" thick.	Adapts cable to cable clamp		Dwg. RA-4251-1
W-804E	RADIO FREQUENCY CABLE RG-22/U; 2 conductor; length 28'-3".	R-F conductor		Dwg. RA-4656-2-2
W-805	CORD CG-152/CRN-10: same as ref W-804.	Sideband antenna feeder		
W-806	CORD CG-152/CRN-10 (19'-9") assembly consisting of:	Sideband antenna feeder		Dwg. RA-4257-2-3

TABLE OF REPLACEABLE PARTS (Cont'd)
Model: Radio Set AN/CRN-10
Major Assembly: Antenna System AS-156/CRN-10

Reference Symbol	Army Stock Number Navy Stock Number British Ref Number	Name of Part and Description	Function	Mfr. and Desig. or Standard Type	Contr or Govt Dwg or Spec. No.
W-806A		PLUG: die cast aluminum shell; overall dimensions $1\frac{3}{16}$ " diameter x $1\frac{3}{8}$ " long; low loss bakelite insert; male contacts 3 No. 16; contact spacing $\frac{1}{8}$ "; threaded section $\frac{1}{8}$ "-20; shell finish fine grain metallic sand blast satin.	Electrical connection	APH AN3106-16S-5PT	AN-W-C-591
W-806B		CABLE CLAMP: die cast aluminum shell; overall dimensions $1\frac{1}{16}$ " diameter x $1\frac{3}{8}$ " long; threaded $\frac{7}{8}$ "-20; fits No. 16 and 16S shell; maximum cable OD $\frac{5}{8}$ "; finish fine grain metallic sand blast satin.	Clamp cable to connector	APH AN3057-8	
W-806C		CAP AND CHAIN: die cast aluminum shell; overall dimensions 1" diameter x $\frac{3}{4}$ " long; threaded 1-20; fits No. 16 and 16S connector; finish fine grain metallic sand blast satin; shoulder type rivet for chain connection; complete with rubber gasket.	Receptacle protection	APH 9670P-16	
W-806D		ADAPTER: split; extra heavy $\frac{3}{8}$ " I.P.S. seamless brass pipe; max. OD $1\frac{1}{16}$ " on flare; normal OD $\frac{9}{16}$ "; $\frac{7}{8}$ " long; cadmium plated 0.0005" thick.	Adapts cable to cable clamp		Dwg. RA-4251-1
W-806E		RADIO FREQUENCY CABLE: RG-22/U; 2 conductor; length 19'-9".	R-F conductor		Dwg. RA-4656-2-3
W-807		CORD CG-152/CRN-10: same as ref W-806.	Sideband antenna feeder		
W-808	2A249-156	CORD CG-154/CRN-10 (47'-11") assembly consisting of:	Sideband feeder		Dwg. RA-4256-2-2
W-808A		PLUG: die cast aluminum shell; overall dimensions $1\frac{3}{16}$ " diameter x $1\frac{3}{8}$ " long; low loss bakelite insert; male contact 3 No. 16; contact spacing $\frac{1}{8}$ "; threaded section $\frac{1}{8}$ "-20; shell finish fine grain metallic sand blast.	Circuit connection	APH AN3106-16S-5PT	AN-W-C-591
W-808B		CABLE CLAMP: die cast aluminum shell; dimensions $1\frac{1}{16}$ " diameter x $1\frac{1}{8}$ " long; threaded $\frac{7}{8}$ "-20; fits No. 16 and 16S shell; maximum cable OD $\frac{5}{8}$ "; finish fine grain metallic sand blast satin.	Clamp cable to connector	APH AN3057-8	
W-808C		ADAPTER: split; extra heavy $\frac{3}{8}$ " I.P.S. seamless brass pipe; max. OD $1\frac{1}{16}$ " on flare; normal OD $\frac{9}{16}$ "; $\frac{7}{8}$ " long; cadmium plated 0.0005" thick.	Adapts cable to cable clamp		Dwg. RA-4251-1
W-808D		ANGLE PLUG: die cast aluminum shell; solid shell pinned; overall dimensions $2\frac{15}{16}$ " x $2\frac{7}{16}$ " x $1\frac{19}{32}$ " diameter low loss bakelite insert ferrule contacts 2 No. 12; contact spacing $\frac{1}{8}$ "; threaded section $1\frac{3}{16}$ "-18; coupling ring threads $1\frac{3}{8}$ "-18; shell finish fine grain metallic sand blast.	Circuit connection	APH AN3108-22-8ST	AN-W-C-591

W-808E	ADAPTER: die cast aluminum shell; overall dimensions $1\frac{3}{16}$ " diameter x $\frac{27}{32}$ " long; internal threads $1\frac{3}{16}$ " x 18"; external threads $\frac{7}{8}$ "-20; fits $\frac{1}{2}$ " outside diameter conduit and No. 20 and 22 connectors; finish fine grain metallic sand blast.	Adapts connector to angle plug	APH AN3055-22-8	Dwg RA-4656-2-6
W-808F	CAP AND CHAIN: die cast aluminum shell; overall dimensions 1" diameter x $\frac{3}{4}$ " long; threaded 1-20; fits No. 16 and 16S connector; finish fine grain metallic sand blast satin; shoulder type rivet for chain connection; complete with rubber gasket.	Receptacle protection	APH 9760P-16	Dwg. RA-4257-2-4
W-808G	CAP AND CHAIN: die cast aluminum shell; overall dimensions $1\frac{3}{8}$ " diameter x $1\frac{1}{16}$ " long; threaded $1\frac{3}{8}$ "-18; fits No. 22 connectors; finish fine grain metallic sand blast satin; shoulder type rivet for chain connection; complete with rubber gasket.	Receptacle protection	APH 9760P-22	AN-W-C-591
W-808H	RADIO FREQUENCY CABLE RG-22/U: 2 conductor; length 47'-11".	R-F conductor		
W-809	CORD CG-152/CRN-10: (24'-7") assembly consisting of:	Carrier antenna feeder		
W-809A	PLUG: die cast aluminum shell; overall dimensions $1\frac{3}{16}$ " diameter x $1\frac{3}{8}$ " long; low loss bakelite insert; male contacts 3 No. 16; contact spacing $\frac{1}{8}$ "; threaded section $\frac{7}{8}$ "-20; shell finish fine grain metallic sand blast satin.	Electrical connection	APH AN3106-16S-5PT	
W-809B	CABLE CLAMP: die cast aluminum shell; overall dimensions $1\frac{1}{16}$ " diameter x $1\frac{1}{8}$ " long; threaded $\frac{7}{8}$ "-20; fits No. 16 and 16S shell; maximum cable OD $\frac{5}{8}$ "; finish fine grain metallic sand blast satin.	Clamp cable to connector	APH AN3057-8	
W-809C	CAP AND CHAIN: die cast aluminum shell; overall dimensions 1" diameter x $\frac{3}{4}$ " long; threaded 1-20; fits No. 16 and 16S connector; finish fine grain metallic sand blast satin; shoulder type rivet for chain connection with rubber gasket.	Receptacle protection	APH 9760P-16	
W-809D	ADAPTER: split; extra heavy $\frac{3}{8}$ " I.P.S. seamless brass pipe; max. OD $1\frac{1}{16}$ " on flare; normal OD $\frac{9}{16}$ "; $\frac{7}{8}$ " long; cadmium plated 0.0005" thick.	Adapts cable to cable clamp		Dwg. RA-4251-1
W-809E	RADIO FREQUENCY CABLE RG-22/U: 2 conductor; length 24'-7".	R-F conductor		Dwg. RA-4656-2-4

Model: Radio Set AN/CRN-10

Major Assembly: Trailer V-6/CRN-10

901 to 999 6J1106
Series
TRAILER V-6/CRN-10: two wheel vehicle; dimensions 6'-7" x 5'-2" x 5'-3"; it carries the course monitor, modulator and bridge; portable course detector; indicator box; probe voltmeter; antenna system; radio transmitter.

TABLE OF REPLACEABLE PARTS (Cont'd)

Model: Radio Set AN/CRN-10 Major Assembly: Trailer V-6/CRN-10

Reference Symbol	Army Stock Number Navy Stock Number British Ref Number	Name of Part and Description	Function	Mfr. and Desig. or Standard Type	Contr or Govt Dwg or Spec. No.
A-901	2Z10127B	TRIPOD ANCHOR ASSEMBLY: consisting of light weight extension tripod; two lengths of lock link chain, one $\frac{1}{4}$ " turnbuckle; two "S" hooks; tripod modified per dwg, all metal items except tripod zinc or cadmium plated.	Tripod and anchor	F	Dwgs. RA-4398-2 RA-4523-3
N-901	#	NAME PLATE (V-6/CRN-10): No. 20 (0.032") GA 25 $\frac{1}{2}$ H sheet aluminum; dimensions $3\frac{1}{16}$ " x $1\frac{3}{16}$ " x $\frac{1}{16}$ ".	Identify apparatus		RA-4720-2-2
O-901	2Z2636-1	CABLE CLAMP: die cast aluminum shell; overall dimensions $1\frac{1}{16}$ " diameter x $1\frac{1}{8}$ " long; fits shell sizes 16 and 16S; maximum cable outside diameter $\frac{5}{8}$ "; threaded $\frac{7}{8}$ "-20; uses two 5-40 x $\frac{3}{4}$ " machine screws; finish fine grain metallic sand blast satin.	Cable support	APH AN3057-8	
O-902	6Z149-3	ADAPTER: die cast aluminum shell; overall dimensions $1\frac{1}{16}$ " diameter x $2\frac{7}{32}$ " long; internal threads $1\frac{3}{16}$ "-18; external threads $\frac{7}{8}$ "-20; fits connector sizes No. 20 and 22; fits $\frac{1}{2}$ " outside diameter conduit; finish fine grain metallic sand blast satin.	Adapt connector to conduit	APH AN3055-22-8	
O-903	2Z1619-10	DUST CAP AND CHAIN: die cast aluminum shell; overall dimensions 1" diameter x $\frac{3}{4}$ " long; plug type, fits connector sizes 16 and 16S; finish fine grain metallic sand blast satin; complete with chain; complete with rubber gasket.	Connector protection	APH 9760-16P	
O-904	2ZK2636-2	CABLE CLAMP: die cast aluminum shell; overall dimensions $1\frac{3}{16}$ " diameter $1\frac{1}{8}$ " long; fits shell size 18; maximum cable outside diameter $1\frac{1}{16}$ "; threaded 1"-20; uses two 8-32 x $\frac{3}{4}$ " machine screws; finish fine grain metallic sand blast satin.	Cable support	APH AN3057-10	
O-905	2Z1612.17	DUST CAP AND CHAIN: die cast aluminum shell; overall dimensions $1\frac{1}{8}$ " diameter x $1\frac{5}{16}$ " long; plug type, fits connector size 18; finish fine grain metallic sand blast satin; complete with 5" chain; complete with rubber gasket.	Connector protection	APH 9760-18P	
O-906	2Z8276-11	BACK SHELL: die cast aluminum shell; overall dimensions $1\frac{3}{16}$ " x $1\frac{1}{8}$ " long; internal threads 1"-20; external threads 1"-20; finish fine grain metallic sand blast satin.	Adapts connector to cable clamp	APH 9793-18	
O-907	2Z8401PH4	SHOCK ABSORBER: holder type; load rating 4 pounds; cold rolled steel; cadmium plated; dimensions 3" x 3" x $1\frac{1}{2}$ " high; 4 mounting holes .257".		L 100PH4	
O-908	2Z8404-6	SHOCK MOUNT: cadmium plated holder; dimensions $2\frac{3}{8}$ " x $2\frac{3}{8}$ " x $1\frac{1}{16}$ " high; center hole 0.257" diameter; 4 mounting holes 0.196" diameter.		L 153PH-15	

Model: Radio Set AN/CRN-10	Major Assembly: Modulator MD-49/CRN-10			
P-901	2Z3062-26	ANGLE PLUG: die cast aluminum shell; overall dimensions $2\frac{1}{4}" \times 1\frac{1}{2}" \times 1\frac{1}{2}"$ diameter; low loss bakelite insert; female contacts 2 No. 12; contact spacing $\frac{1}{8}"$; threaded section $1\frac{3}{16}"-18$; coupling ring threads $1\frac{3}{8}"-18$; shell finish fine grain metallic sand blast; solid shell pinned.	Circuit connection	APH AN3108-22-8ST AN-W-C-591
P-902	2ZK7117.12	ANGLE PLUG: die cast aluminum shell; overall dimensions $2\frac{1}{16}" \times 1\frac{3}{16}" \times 1\frac{5}{16}"$ diameter; bakelite insert male contacts 2 No. 12 and 5 No. 16; contact spacing $\frac{1}{16}"$; threaded section $1"-20$; coupling ring threads $1\frac{1}{8}"-18$; shell finish fine grain metallic sand blast.	Circuit connection	APH AN3108-18-9P AN-W-C-591
P-903	2ZK7117.13	PLUG: die cast aluminum shell; overall dimensions $1\frac{3}{16}"$ diameter x $2"$ long; bakelite insert; male contacts 5 No. 16 and 2 No. 12; contact spacing $\frac{1}{16}"$; threaded $1"-20$; shell finish fine grain metallic sand blast satin.	Circuit connection	APH AN3106-18-9P AN-W-C-591
C-1001		CAPACITOR: paper; 1 microfarad; $\pm 10\%$; 600 v d-c working; dimensions $1\frac{3}{16}" \times 1\frac{1}{4}" \times \frac{1}{8}"$; metallic case.	Mod. cathode bypass	CP50B1FF105KK C75.16-1944
C-1002		CAPACITOR: same as ref C-1001.		
C-1003		CAPACITOR: paper; 0.1 microfarad; $\pm 10\%$; 1000 v d-c working; $1\frac{13}{16}" \times 1\frac{1}{4}" \times \frac{1}{8}"$; metallic case	Mod. screen bypass	CP50B1EG104KK C75.16-1944
E-1001		BUSHING ASSEMBLY: lead through; 2 parts; 0.156" hole through center of both parts; each part $\frac{3}{8}" \times \frac{5}{8}"$.	Lead through bushing	NS4W4102 Spec. JAN-1-8
E-1002		BUSHING ASSEMBLY: same as ref E-1001.		
E-1003		BUSHING ASSEMBLY: same as ref E-1001.		
E-1004		POST INSULATOR: stand-off; round post; steatite; $\frac{1}{2}" \times \frac{3}{8}"$ diameter; both ends tapped No. 6-32 x $\frac{3}{16}"$ depth.		Dwg. RA-171-1A Spec. JAN-1-8
E-1005		POST INSULATOR: same as ref E-1004.		
E-1006		BUSHING: resistor insulating; hole 0.157"; one end $1\frac{3}{16}"$; other end $\frac{11}{16}"$; head $\frac{3}{8}"$.	IRC 30	
E-1007		BUSHING: same as ref E-1006.		
E-1008		BUSHING ASSEMBLY: same as ref E-1001.		
E-1009		BUSHING ASSEMBLY: same as ref E-1001.		
E-1010		POST INSULATOR: same as ref E-1004.		
E-1011		POST INSULATOR: same as ref E-1004.		

TABLE OF REPLACEABLE PARTS (Cont'd)

Model: Radio Set AN/CRN-10 Major Assembly: Modulator MD-49/CRN-10

Reference Symbol	Army Stock Number Navy Stock Number British Ref Number	Name of Part and Description	Function	Mfr. and Desig. or Standard Type	Contr or Govt Dwg or Spec. No.
E-1012		POST INSULATOR: same as ref E-1004.			
E-1013		POST INSULATOR: same as ref E-1004.			
E-1014		BOARD: terminal; molded bakelite; $6\frac{5}{8}"$ x $1\frac{13}{16}"$ x $2\frac{5}{32}"$; 8 screw terminals.		JO 6-150	Spec. 71-2202A
E-1015	-2Z9402182	BOARD: terminal; phenolic; $\frac{7}{8}"$ x $\frac{3}{8}"$ x $\frac{1}{16}"$; 0.140" diameter hole.		CMC 1891	
E-1016		CLIP: tube contact; ceramic insulation; low loss; $1\frac{1}{8}"$ x $\frac{5}{8}"$ x $\frac{9}{16}"$. Grid cap		N SPP-3	
E-1017		CLIP: same as ref E-1016.			
E-1018		CLIP: same as ref E-1016.			
E-1001		FUSE: cartridge type; $\frac{1}{4}$ amp; 1000 v; 3" long x $\frac{13}{16}"$ cap diameter.		LI 2015 or equal	
H-1001		GROMMET: $\frac{3}{4}"$ OD; ID $\frac{5}{16}"$; groove $\frac{3}{32}"$; depth $\frac{11}{32}"$; inside groove diameter $\frac{15}{32}"$.		AIR 2214	
H-1002		GROMMET: same as ref H-1001.			
H-1003		GROMMET: OD $\frac{7}{8}"$; ID $\frac{1}{2}"$; groove $\frac{3}{32}"$; depth $\frac{11}{32}"$; inside groove diameter $\frac{3}{4}"$.		AIR 452	
I-1001		PILOT LIGHT ASSEMBLY: consisting of:	Mod. ON indicator	KL FT555 D/E HV unit	
I-1001A		SOCKET: double contact; bayonet base; standard.			
I-1001B		LAMP: miniature bayonet; double contact base; 120 v; 6 w; clear.		G5 S-6	
I-1001C		LENS: threaded anodized aluminum lens cap; amber.			
M-1001		METER: 0-50 volt; a-c rectifier type; 1000 ohms per volt; 50 division scale; caption to read PERCENTAGE MODULATION; calibrated for non-metallic panel; to operate on a temperature range -55°C (-67°F) to $+75^{\circ}\text{C}$ ($+167^{\circ}\text{F}$); treatment for resistance to moisture and fungus.	Modulation indicator	W1 301	AWS Specifica- tion where applicable

N-1001	NAMEPLATE: (MD-49/CRN-10); No. 20 (.032) GA. 3S 1/2 H sheet aluminum; dimensions 3 1/16" x 1 3/16" x 1/16".	Identify equipment	MET	Dwg. RA-6629-3-9
N-1002	NAME PLATE: same as ref N-1001.			Dwg. RA-6334-3-9
N-1003	NAME PLATE: same as ref N-1001.			Dwg. RA-669-1
N-1004	DESIGNATION STRIP: dimensions 5 1/4" x 3/8" x 1/16"; bakelite grade XX black.		MET	Dwg. RA-7411-1
N-1005	NAME PLATE: (MODULATION); dimensions 1 1/4" x 5/16" x 1/16"; 32 S 1/4 to 1/2 H aluminum sheet.	Identify switch	MET	Dwg. RA-7353-1-1
N-1006	WARNING PLATE: dimensions 3 1/2" x 1 1/2" x 1/16"; No. 20 (.032") GA. 3 S 1/2 H sheet aluminum.	Warning plate	MET	
O-1001	LOCK NUT: potentiometer shaft; for 1/4" shaft; 2 pieces; hex base; 1/2" OD x 3/8" ID thread 3/16" depth.		MJ 10061	
O-1002	METER GUARD: molded transparent polystyrene; overall dimensions 3 1/2" OD x .190" thick; meter adjusting hole 3/8" OD.	Protects meter	F	Dwg. F-39684-2
O-1003	GASKET: meter; dimensions 3 1/2" OD x 2 3/4" ID; three No. 28 (.140") holes per drawing.	For meter	F	Dwg. RA-7342-1
O-1004	GASKET: pilot light; dimensions 1 3/8" OD x 7/8" ID x 1/16" thick; Fairprene No. 5565.	For pilot light	F	Dwg. RA-7341-1
O-1005	GASKET: pure gum rubber; 1/16" x 1/4"; 4 foot length.		F	
O-1006	SHIELD: toggle switch; neoprene; dimensions 1 3/16" OD; three .093 diam. holes drilled per drawing.	Protects toggle switch	F	Dwg. RA-4131-1
O-1007	SHOCK MOUNT: 35-pound capacity; rubber insert 2" in diameter by 1" thick; center metal ferrule 5/64" ID; mounting plate 2 1/4" x 2 1/4"; mounting holes on 1 3/4" centers.		Lord 200PH35	
O-1008	SHOCK MOUNT: same as ref O-1007.			
O-1009	SHOCK MOUNT: same as ref O-1007.			
O-1010	SHOCK MOUNT: same as ref O-1007.			
R-1001	RESISTOR: composition; fixed; 7500 ohm; $\pm 5\%$ 1 watt; insulated; resistance element 0.718" x 0.280" diam; two 1 1/2" wire leads taken off resistor one at each end; color coding RMA.	Osc. cathode bias	RC30BF752J	JAN-R-11

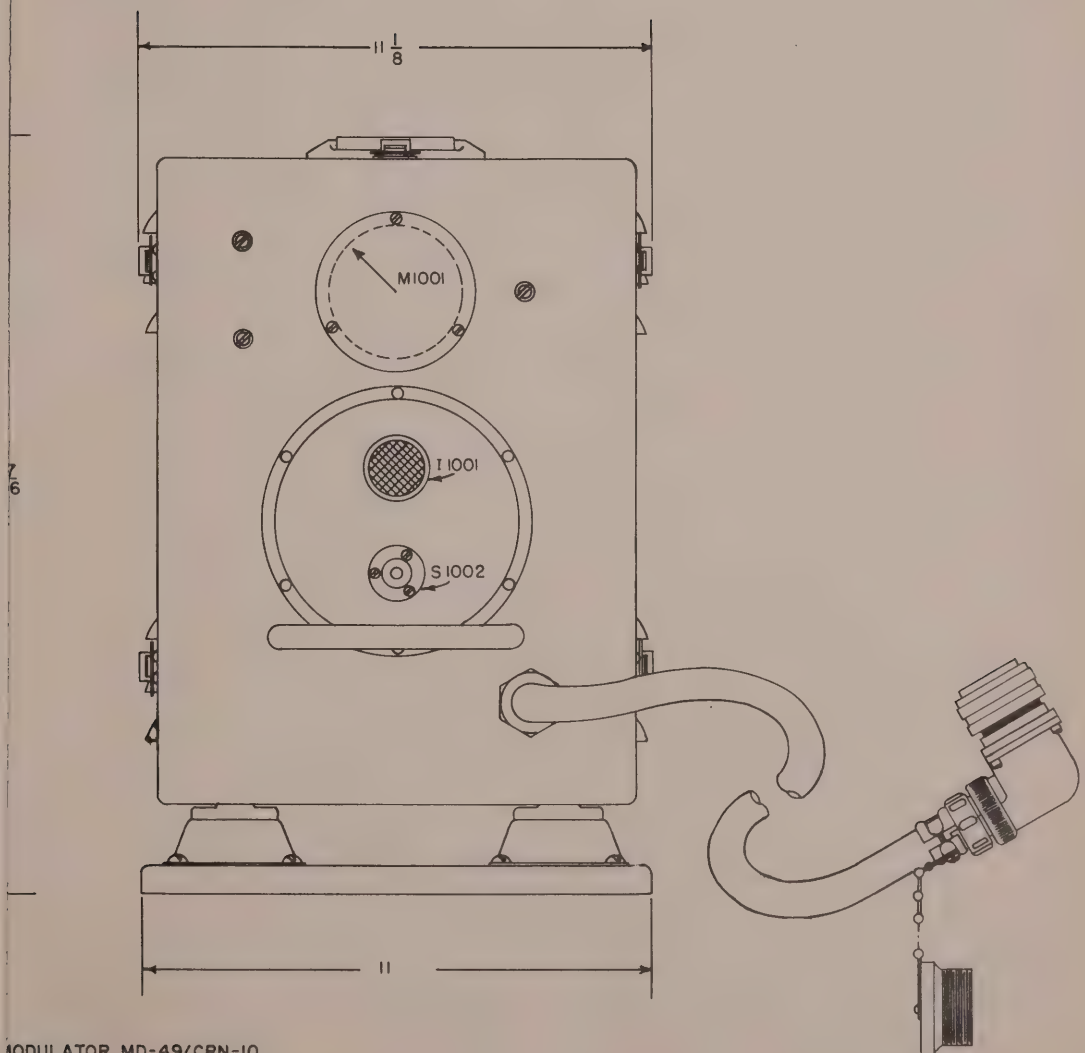
TABLE OF REPLACEABLE PARTS (Cont'd)

Model: Radio Set AN/CRN-10

Major Assembly: Modulator MD-49/CRN-10

Reference Symbol	Army Stock Number Navy Stock Number British Ref Number	Name of Part and Description	Function	Mfr. and Desig. or Standard Type	Contr or Govt Dwg or Spec, No.
R-1002	2Z7286.7	RESISTOR: variable; 600 ohms; $\pm 10\%$ 2 watt; "T" pad attenuator; wire wound; to operate in temperature range of -55°C (-67°F) to $+75^{\circ}\text{C}$ ($+167^{\circ}\text{F}$); moisture and fungus treatment; $2\frac{5}{16}" \times 1\frac{11}{16}"$ diam. bushing $\frac{3}{8}" - 32 \times \frac{3}{8}"$.	Modulation control	CLM CIT-58 Modified	RA-6989-1
R-1003	3RC30BE621J	RESISTOR: fixed; composition; 620 ohm; $\pm 5\%$; 1 watt; insulated; resistance element $0.718" \times 0.280"$ diam; two $1\frac{1}{2}"$ wire leads taken off one at each end; color coding RMA.	Audio line	RC30BE621J	JAN-R-11
R-1004		RESISTOR: fixed; wire wound; 310 ohm; $\pm 5\%$; 5 watt; $2" \times 1\frac{9}{16}"$ diam; ID to clear No. 6-32 screw.	Mod. cathode bias	RW32E311	JAN-R-26
R-1005		RESISTOR: fixed; wire wound; 25,000 ohm; $\pm 5\%$; 18 watt; $4" \times 1\frac{5}{16}"$ OD; ID to clear $0.688"$ hole.	Voltage divider	RW36E253	JAN-R-26
R-1006		RESISTOR: fixed; wire wound; 20,000 ohm; $\pm 5\%$; 18 watt; $4" \times 1\frac{5}{16}"$ OD; ID to clear $0.688"$ hole.	Voltage divider	RW36E203	JAN-R-26
R-1007	3RC30BF304J	RESISTOR: fixed; composition; 360,000 ohm; $\pm 5\%$; 1 watt; $0.718" \times 0.280"$ OD.	Mod. meter multiplier	RC30BF304J	JAN-R-11
S-1001		KEYER: automatic identification.	Modulation keying	Sangamo	Spec. RA-7156-1 Dwg. RA-7025-12
S-1002		SWITCH: 3 amp; 125 v DPDT; no OFF position; rear lug type.	Modulator ON-OFF control	C-H 8825-K-5	
T-1001		TRANSFORMER: a-f oscillator; 3 windings; 600 or 1200 ohm line; resistance of primary 36 ohms; secondary 56 ohms; third 0.54 ohms; voltage test 1000 volts rms at 60 cycles; solder seal case; case dimensions $4\frac{1}{16}" \times 3\frac{13}{16}" \times 2\frac{15}{16}"$; mounting holes in $4\frac{1}{4}"$ and $2\frac{1}{4}"$ centers; height over terminals $4\frac{15}{16}"$.	1020 cps generator	F	Spec. F-34112-1 F-33076-1 Dwg. F-34113-1
T-1002		TRANSFORMER: a-f output; 2 windings; resistance primary 600 ohm; resistance secondary not less than 100,000 ohm; with constant input, voltage of output over 90 to 3500 cycles shall differ from output at 1000 cycles by less than $+0$ db and -1.75 db; solder seal case; dimensions of case $3\frac{1}{2}" \times 3\frac{3}{4}" \times 2\frac{3}{4}"$; mounting holes in $2\frac{3}{16}" \times 3\frac{1}{4}"$ centers; 5 bushing type terminals; height over terminals $4\frac{5}{8}"$; temperature range -55°C to $+71^{\circ}\text{C}$ (-67°F to $+160^{\circ}\text{F}$).	Modulator input	F	Spec. F-34196-1 F-33076-1 Dwg. F-34197-1

T-1003	TRANSFORMER: filament; 2 windings; primary 115 volts 55-65 cycles; secondary 6.3 v at 3.1 amps; no center tap; case dimensions $4\frac{1}{16}" \times 4\frac{3}{4}" \times 2\frac{15}{16}"$; mounting holes in $2\frac{1}{4}" \times 4\frac{1}{4}"$ centers; temperature range -55°C to $+71.1^{\circ}\text{C}$ (-67°F to $+163^{\circ}\text{F}$).	Filament supply	F	Spec. F-33780-1 F-33076-1 Dwg. F-33781-1
T-1004	TRANSFORMER: modulation transformer; 2 windings; resistance of primary 15,000 ohms; resistance of secondary 4250 ohms; test voltage of primary winding 3500 volts rms; test voltage of secondary 5000 volts rms; solder seal case; case dimensions $4\frac{1}{16}" \times 3\frac{3}{16}" \times 2\frac{15}{16}"$; mounting holes on $4\frac{1}{4}"$ and $2\frac{1}{4}"$ centers; height over terminals $5\frac{1}{4}"$.	Modulation transformer	F	Spec. RA-6786-1 F-33076-1 Dwg. RA-6787-1
V-1001	TUBE: JAN-807; (Commercial 807).	Oscillator	RCA or equal	
V-1002	TUBE: same as ref V-1001.	Modulator		
V-1003	TUBE: same as ref V-1001.	Modulator		
X-1001	2Z8763.4 SOCKET: for Tube JAN-807; 5 contact.		APH R SS 5	
X-1002	SOCKET: same as ref X-1001.			
X-1003	SOCKET: same as ref X-1001.			



MODULATOR MD-49/CRN-10

Figure 8-6A. Modulator MD-49/CRN-10—Outline Dimensions

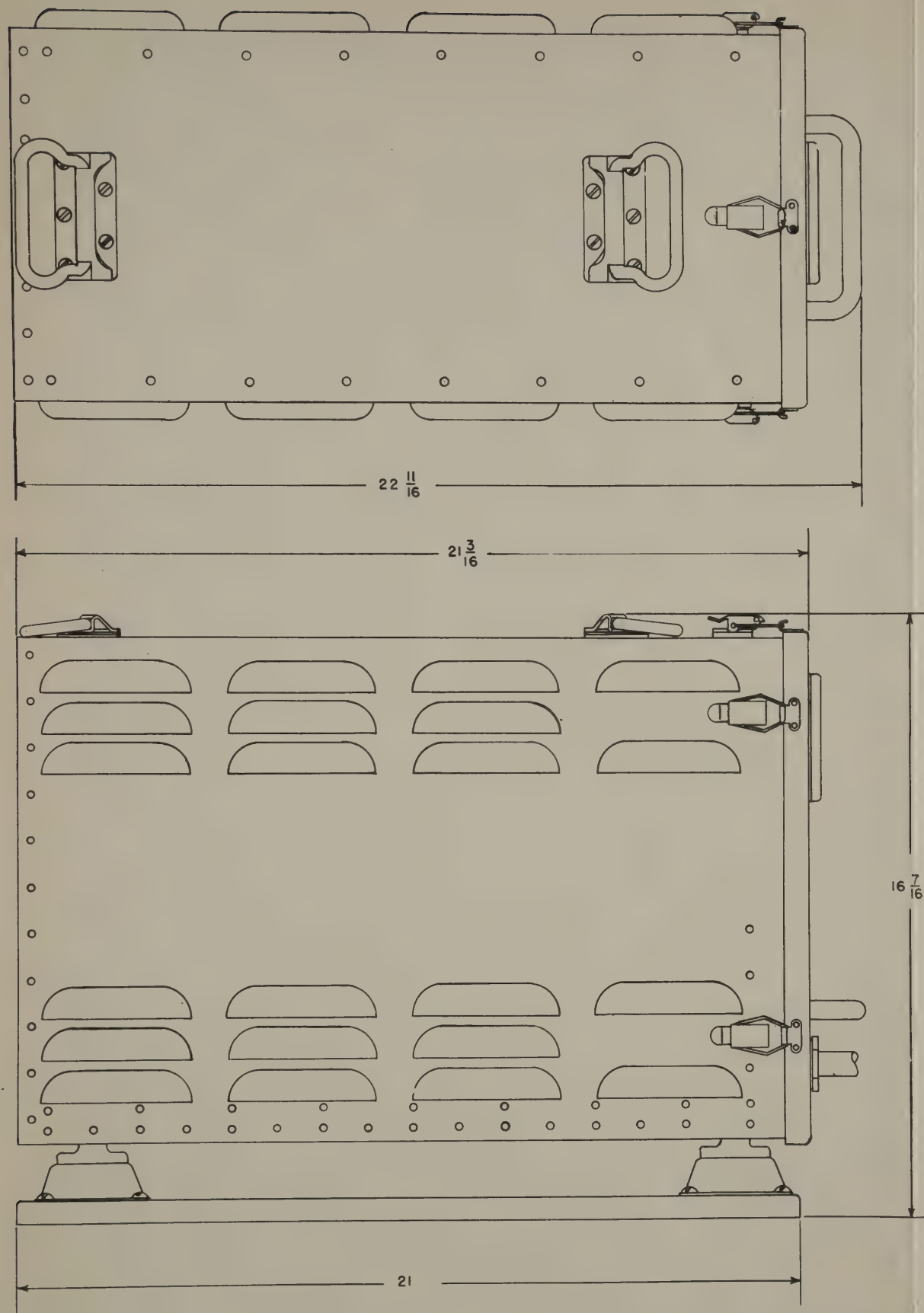


FIG. 134
OUTLINE DRAWING OF MODULATOR MD-49/CRN-10

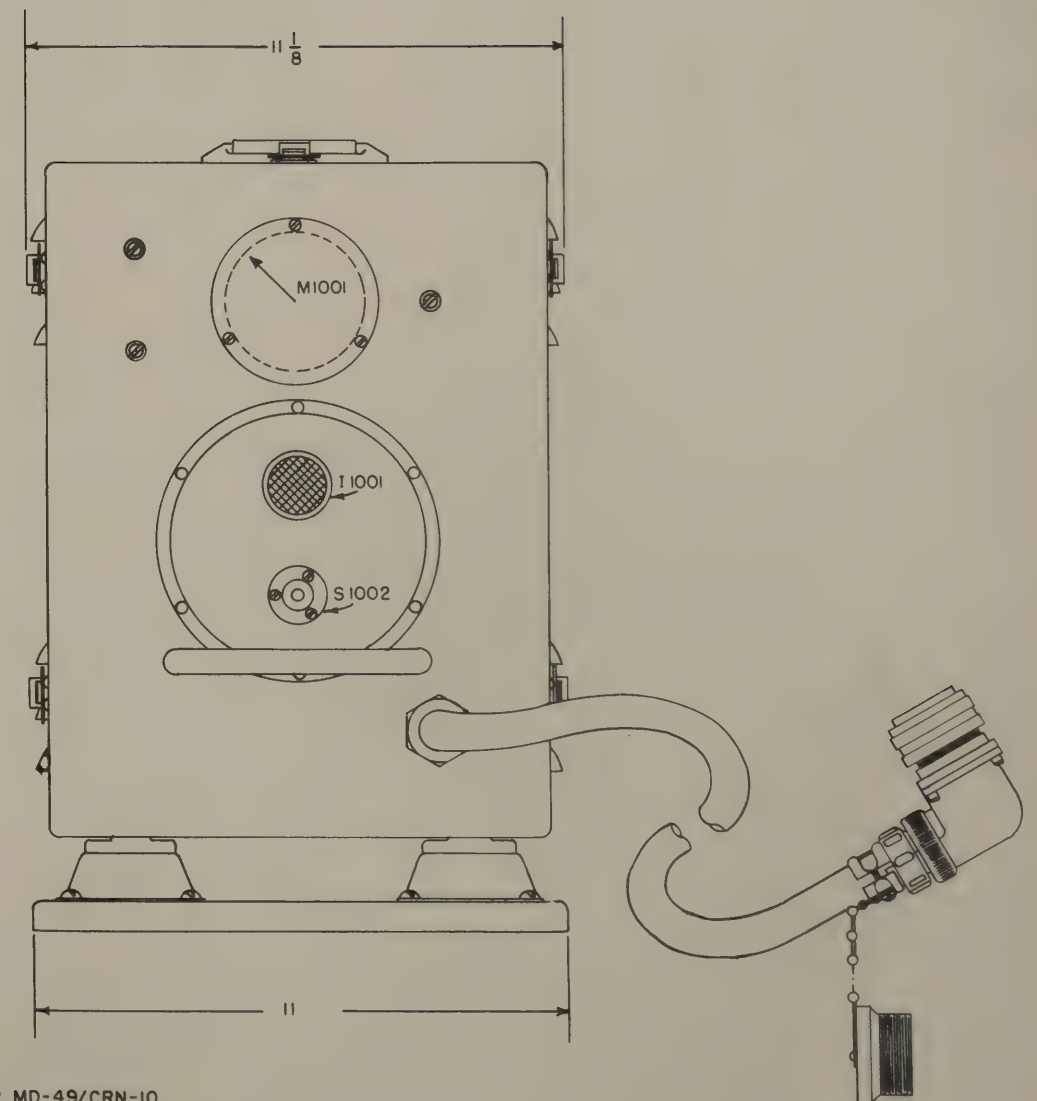


Figure 8-6A. Modulator MD-49/CRN-10—Outline Dimensions

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8-14A—8-14B

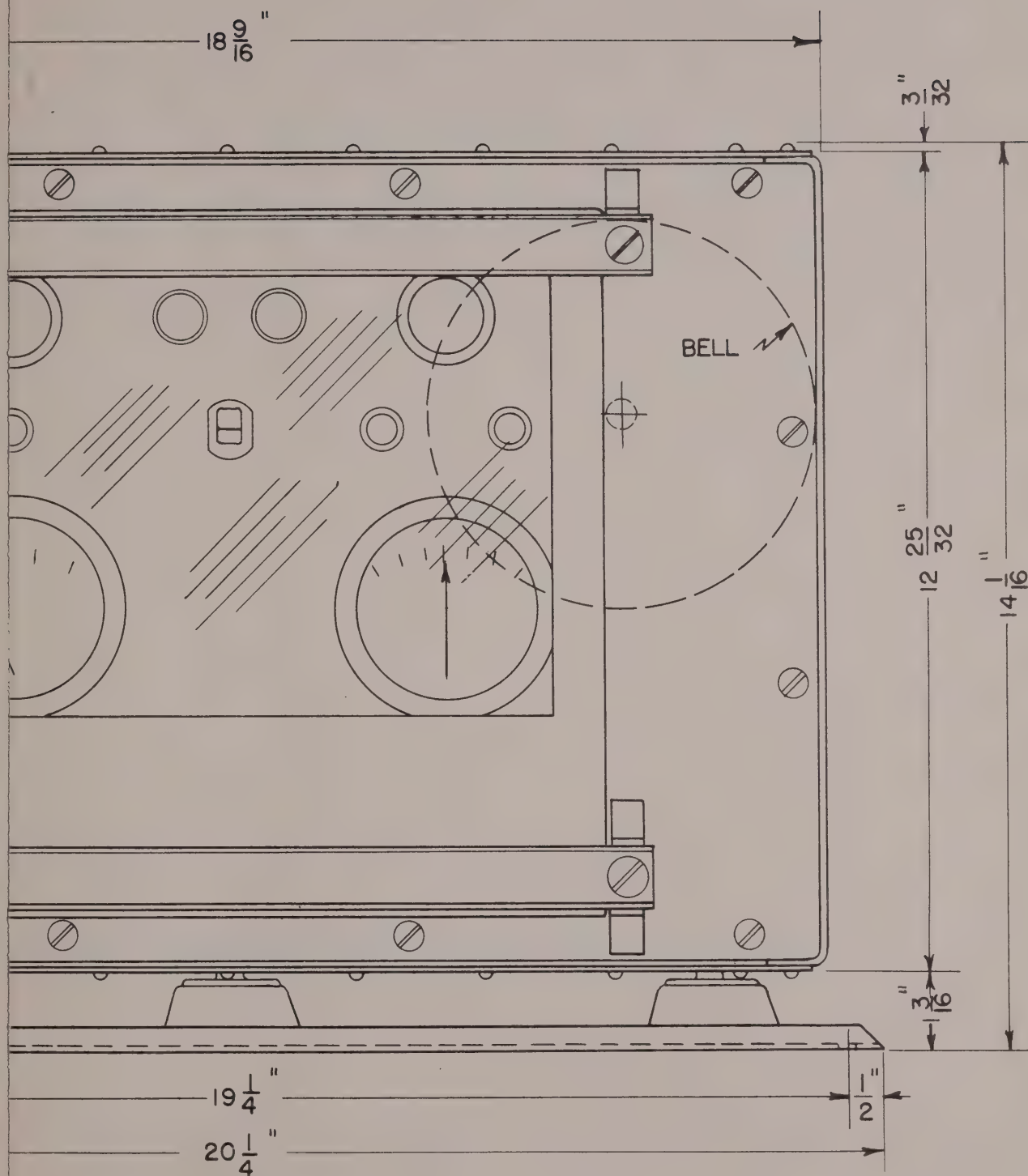


Figure 8-7. Indicator ID-70/CRN-10 or ID-70A/CRN-10—Outline Dimensions

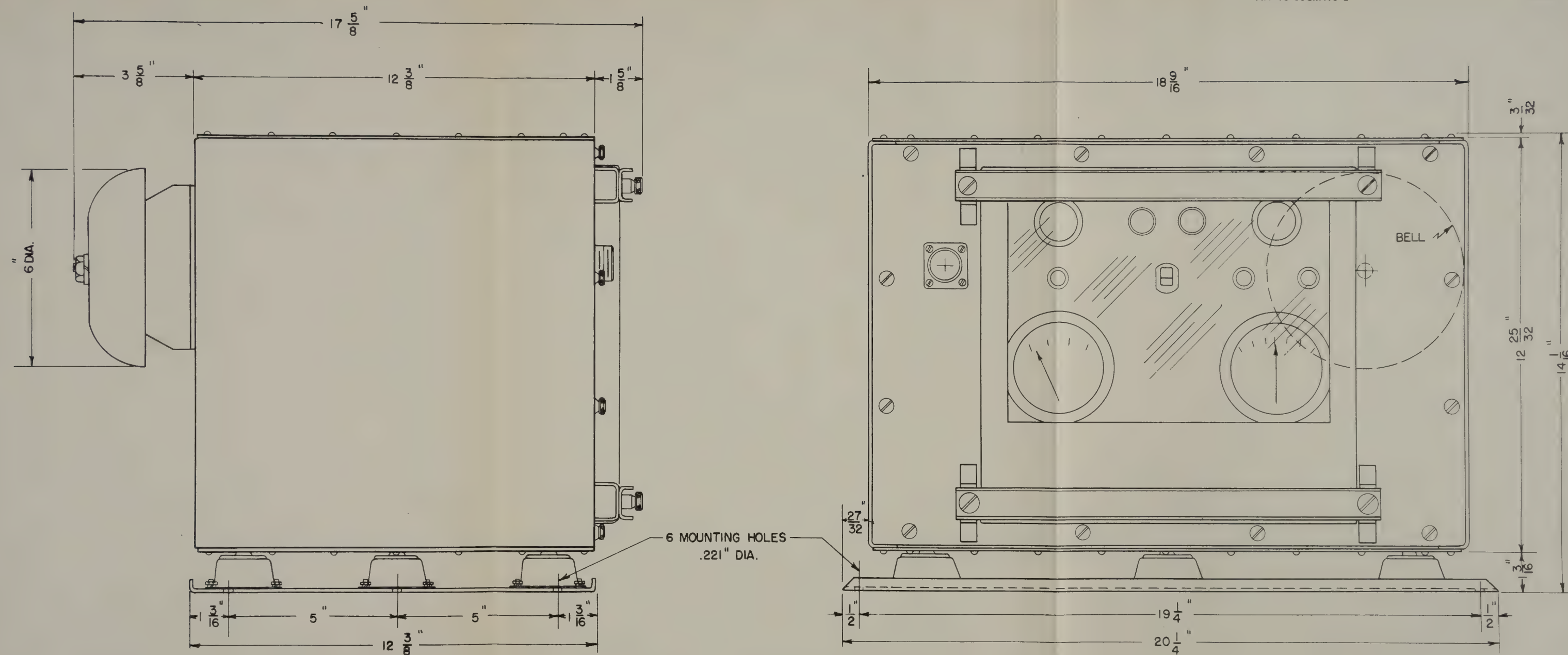


Figure 8-7. Indicator ID-70/CRN-10 or ID-70A/CRN-10—Outline Dimensions





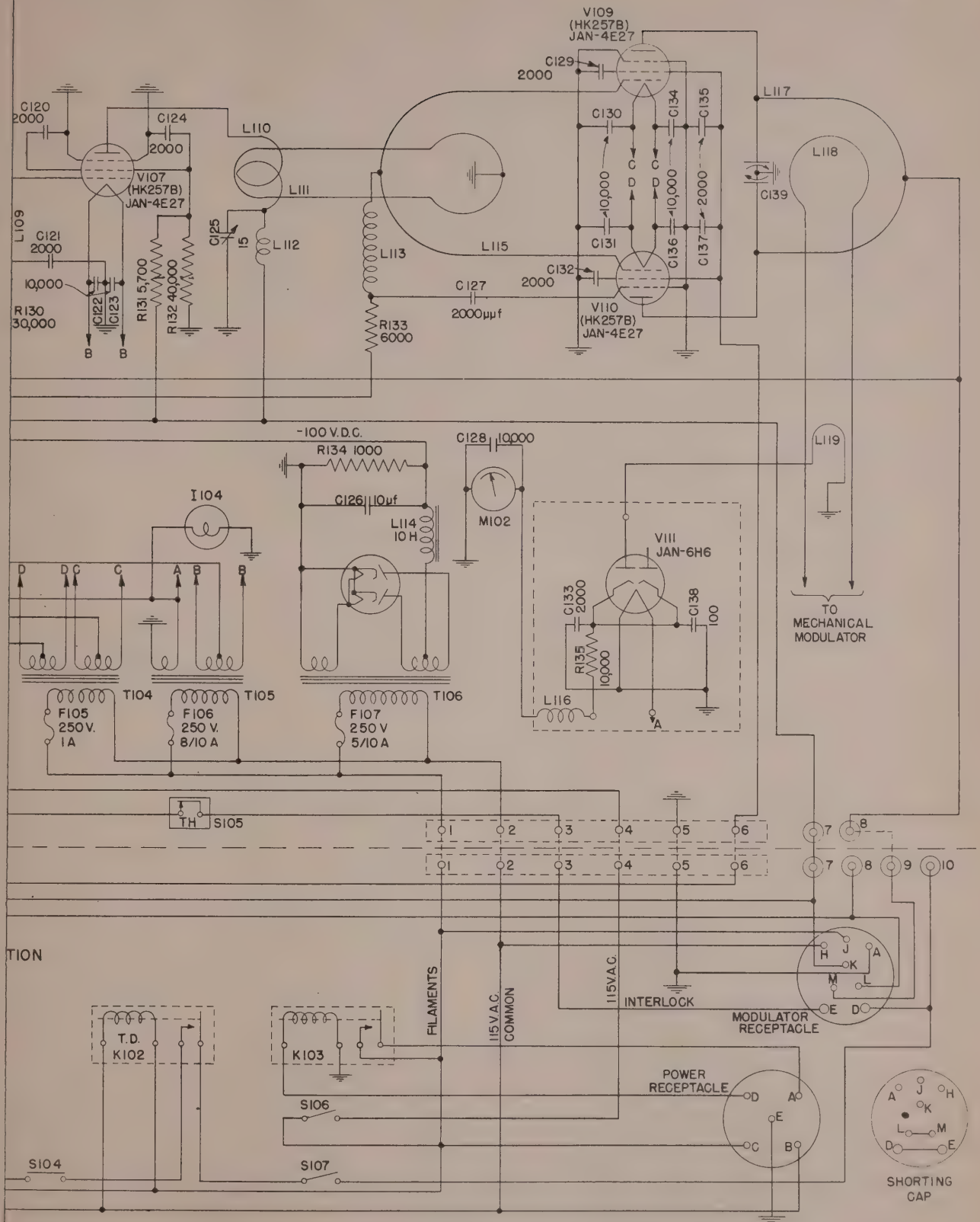


Figure 8-23. Radio Transmitter T-66/CRN-10—Schematic Diagram

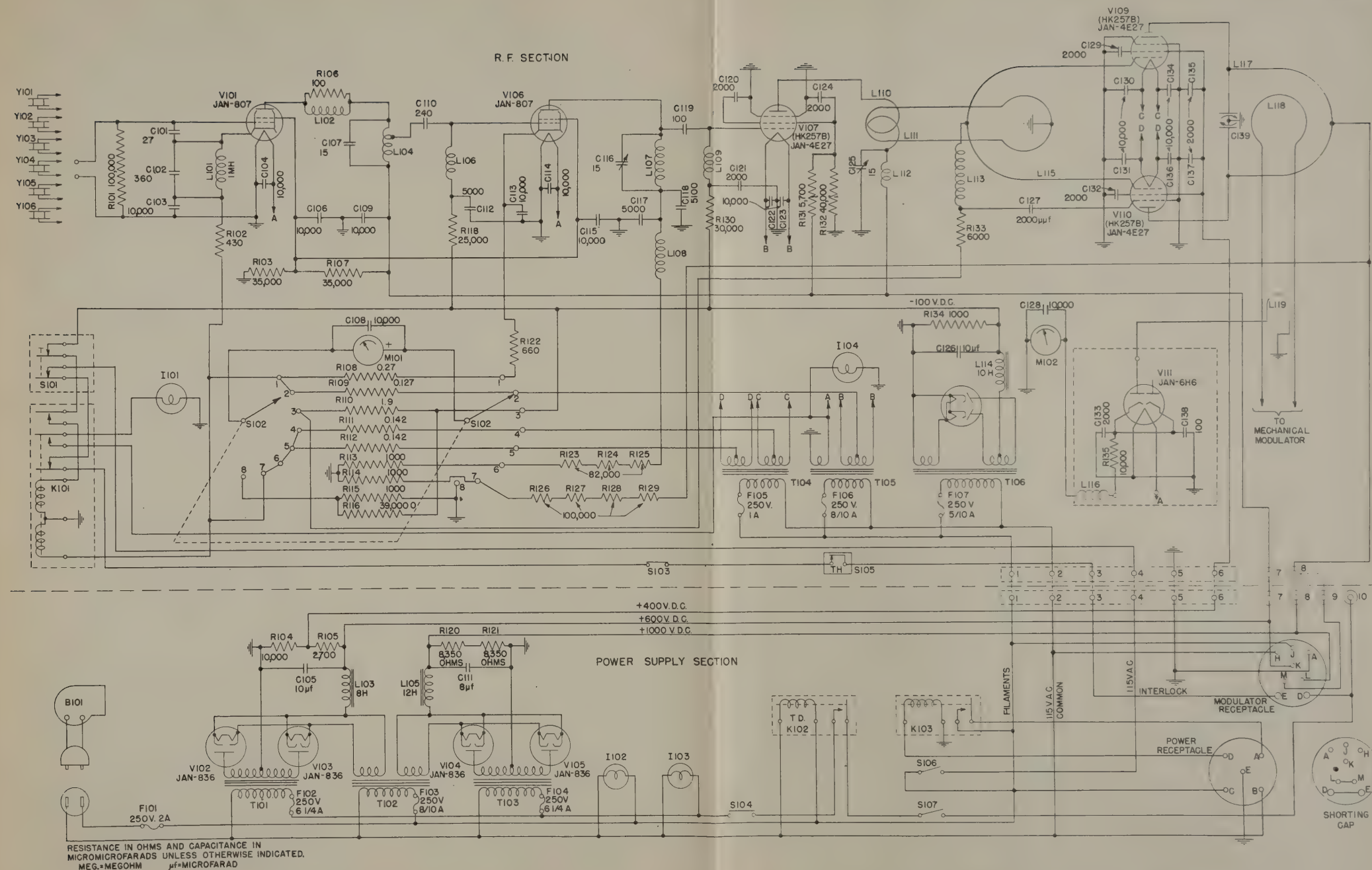


Figure 8-23. Radio Transmitter T-66/CRN-10—Schematic Diagram

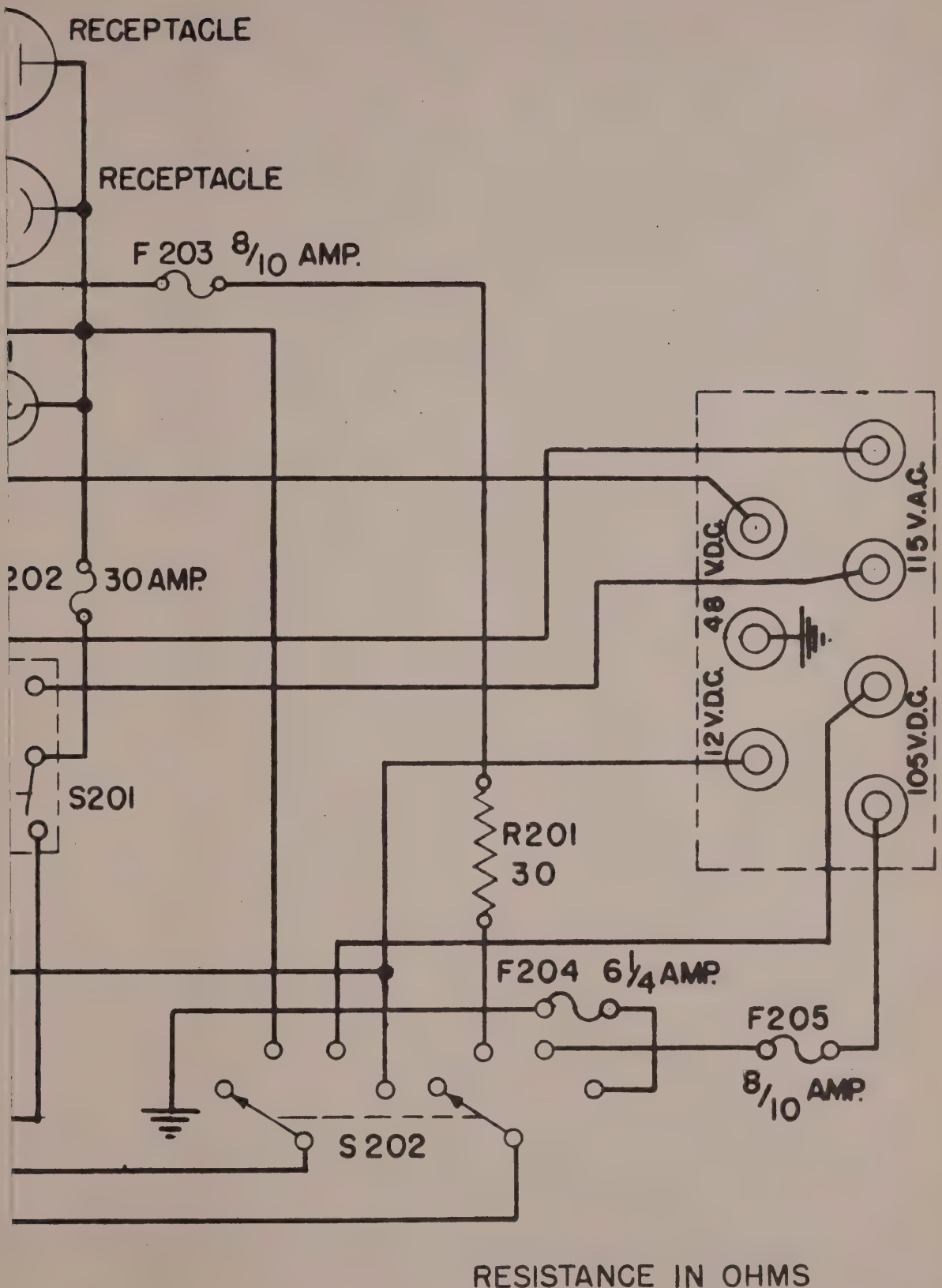


Figure 8-24. Transmitter Junction Box—Schematic Diagram

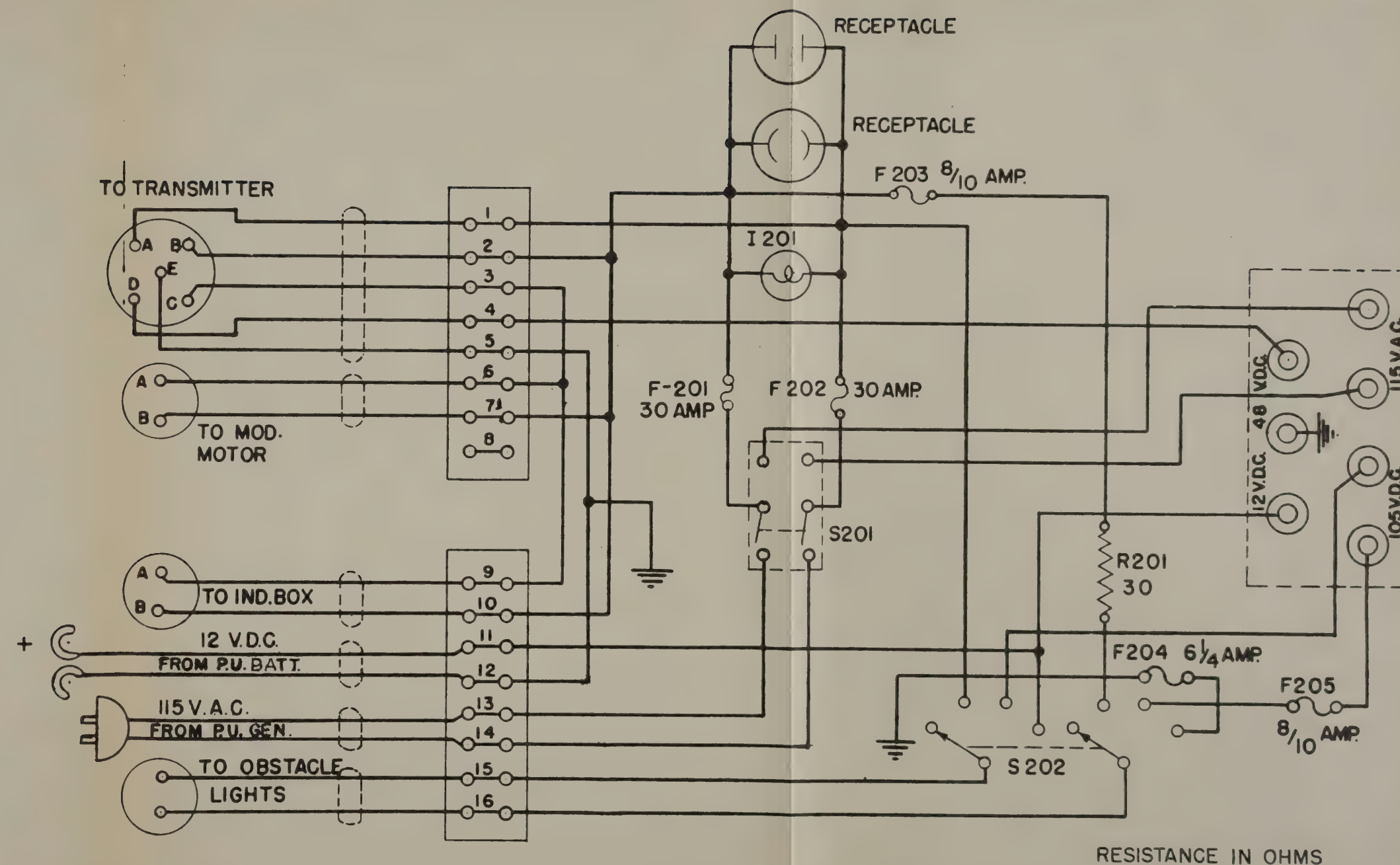
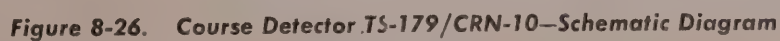


Figure 8-24. Transmitter Junction Box—Schematic Diagram

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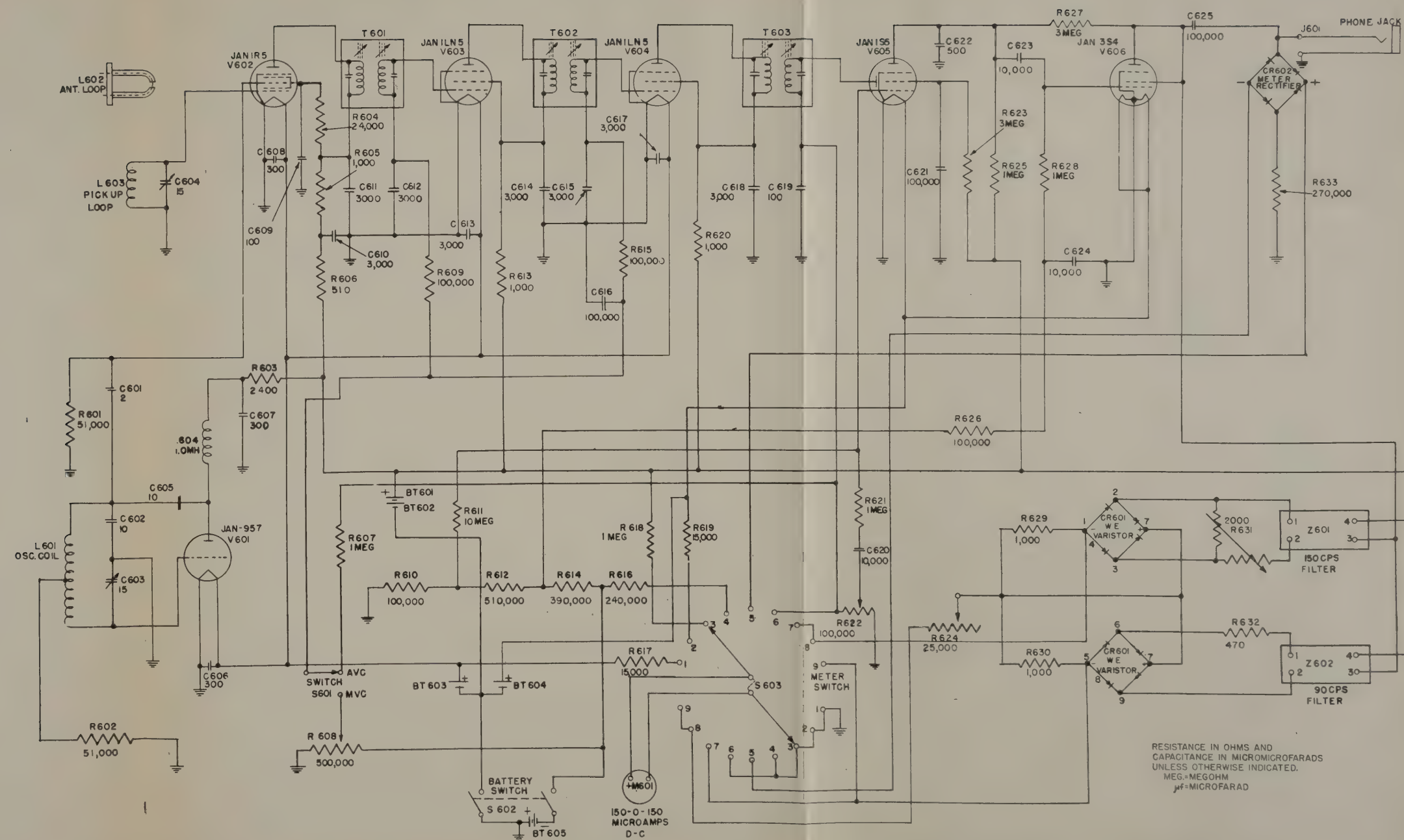


Figure 8-26. Course Detector TS-179/CRN-10—Schematic Diagram

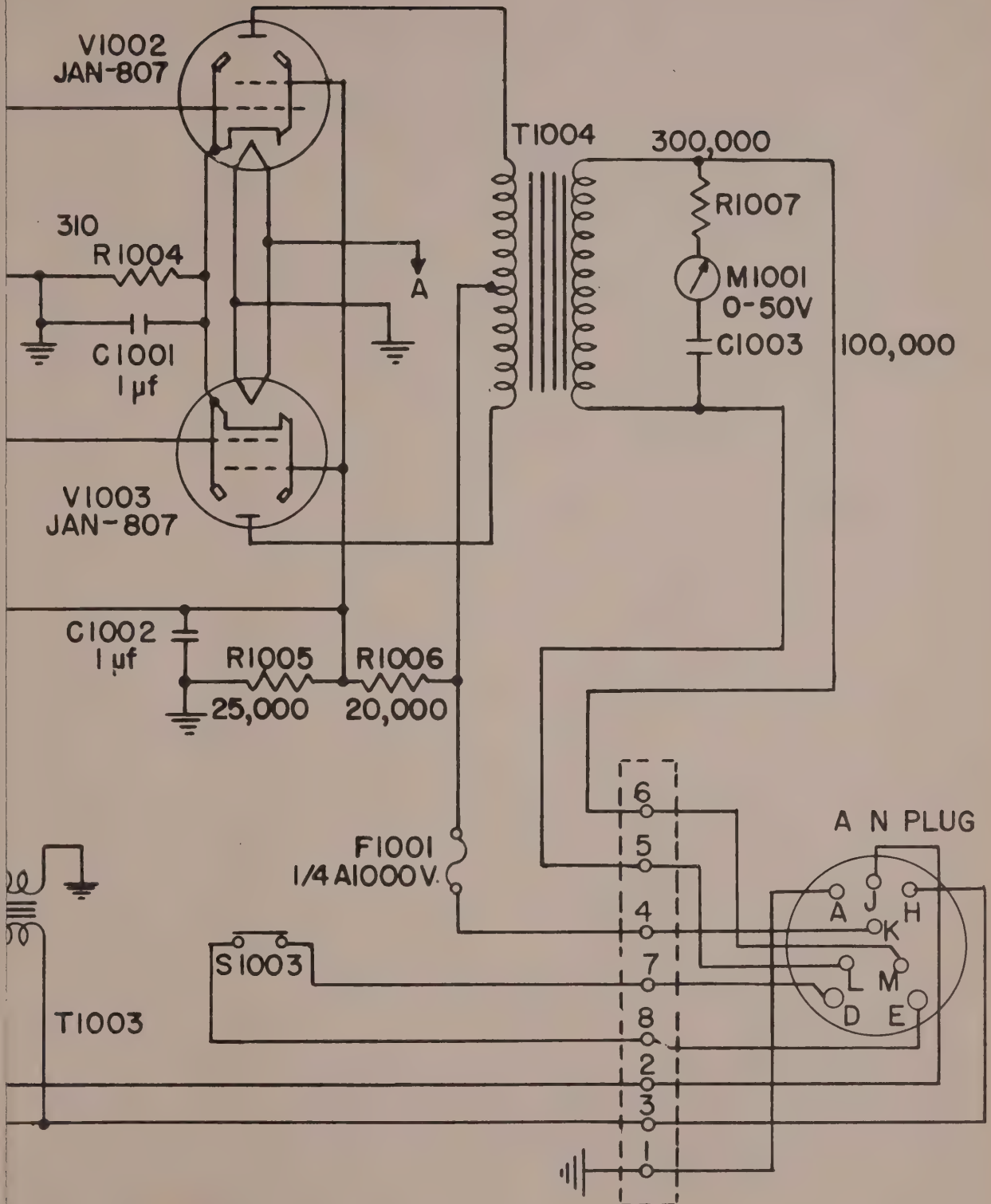


Figure 8-27A. Modulator MD-49/CRN-10—Schematic Diagram

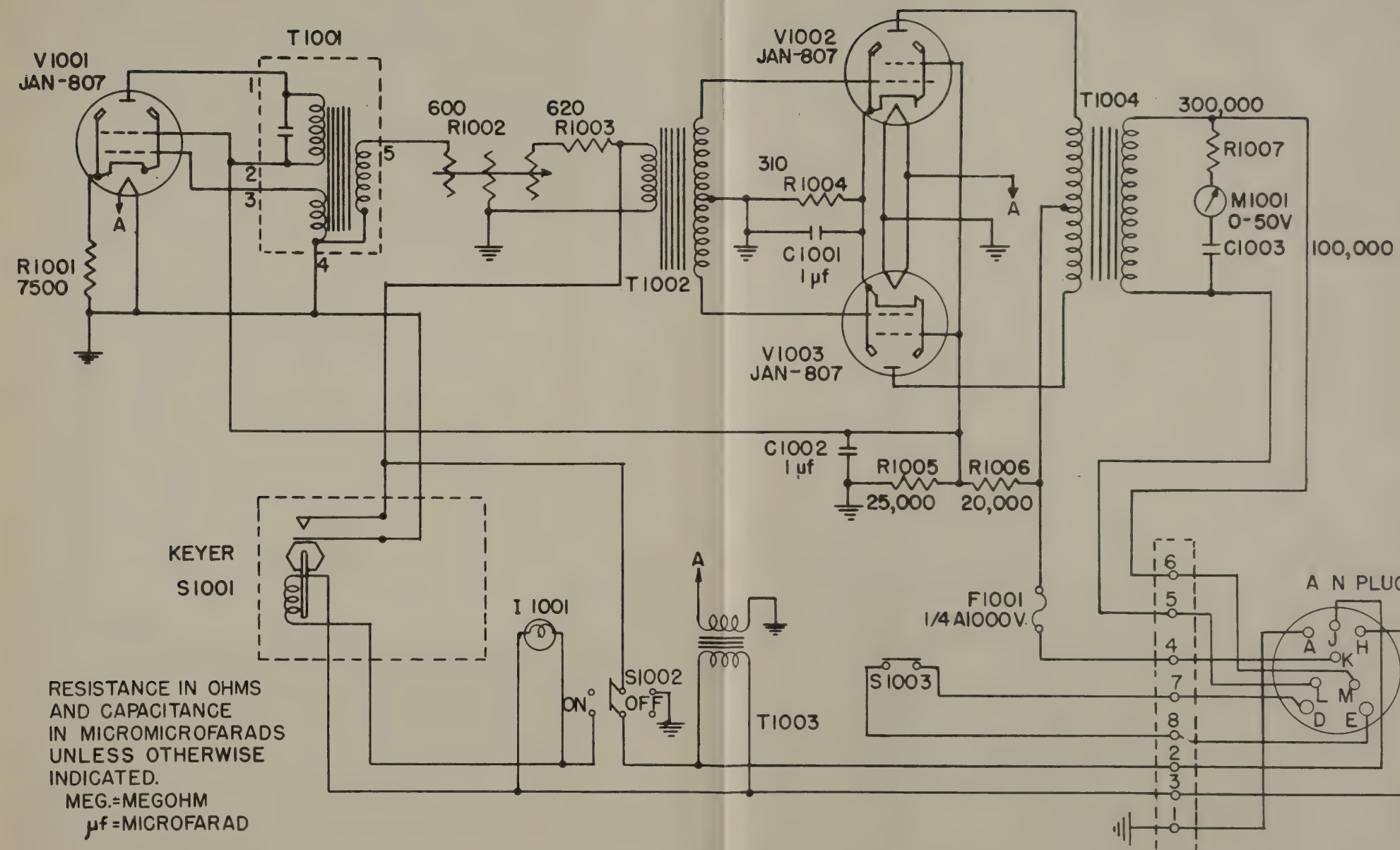


Figure 8-27A. Modulator MD-49/CRN-10—Schematic Diagram

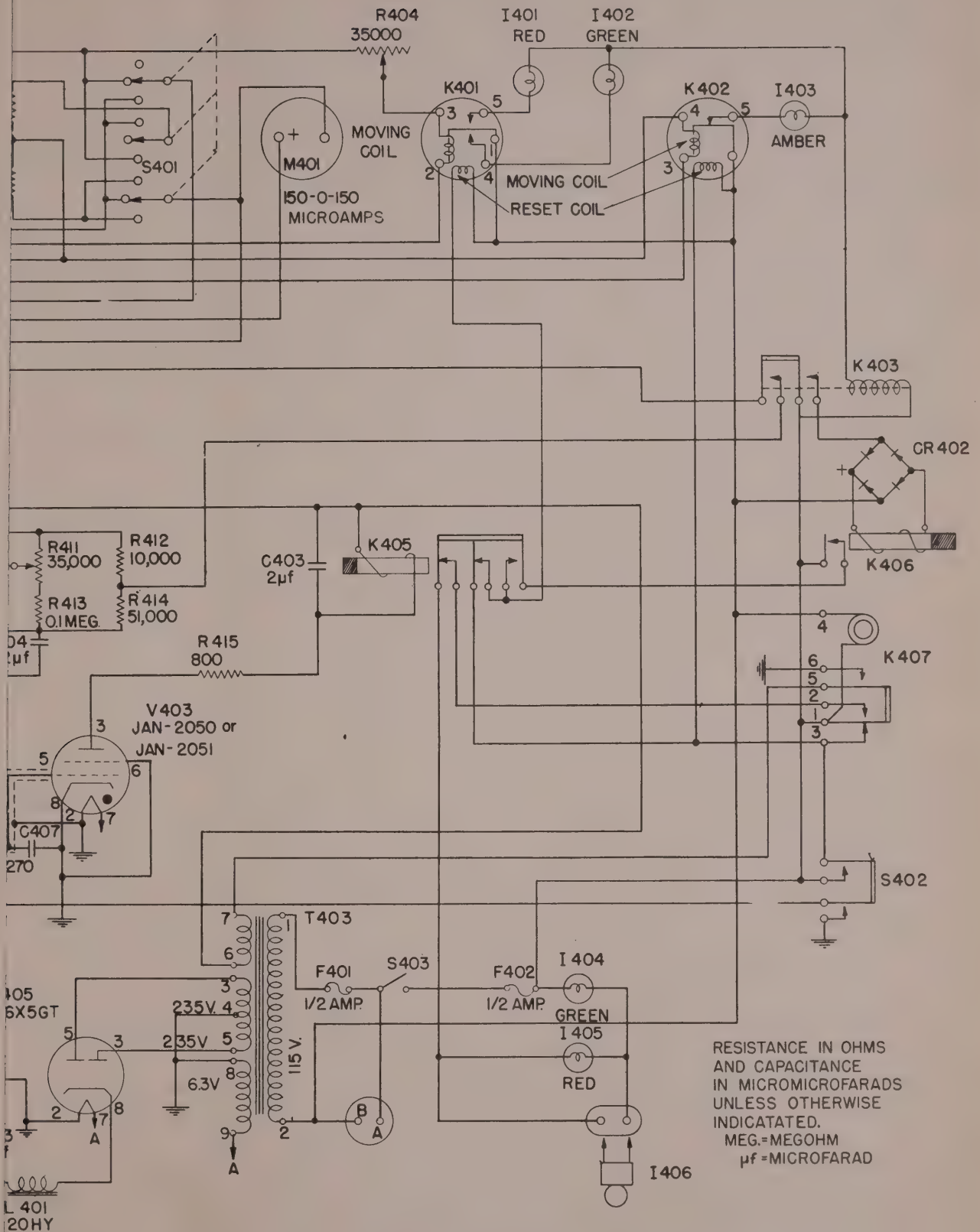


Figure 8-28A. Indicator ID-70A/CRN-10—Schematic Diagram

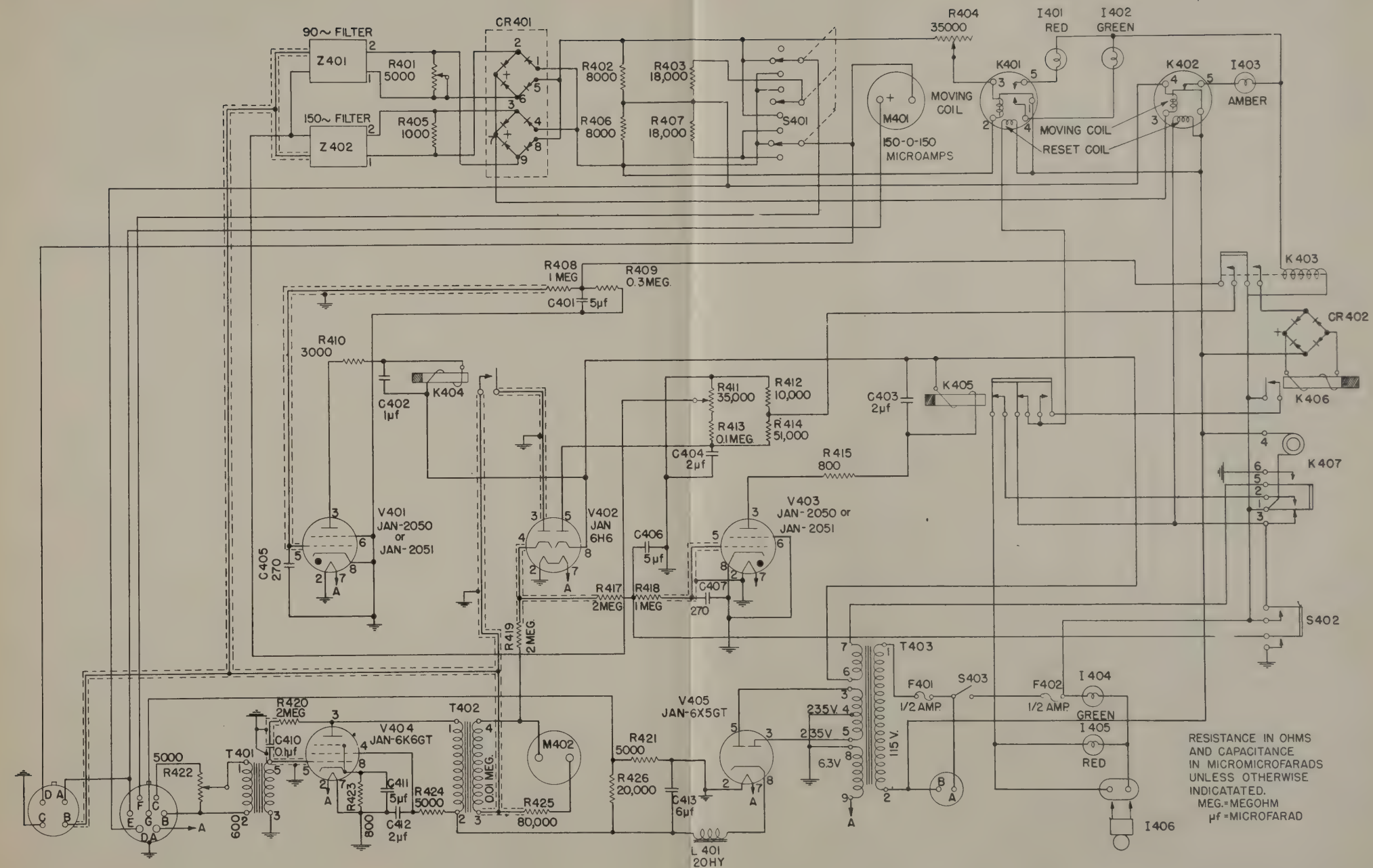
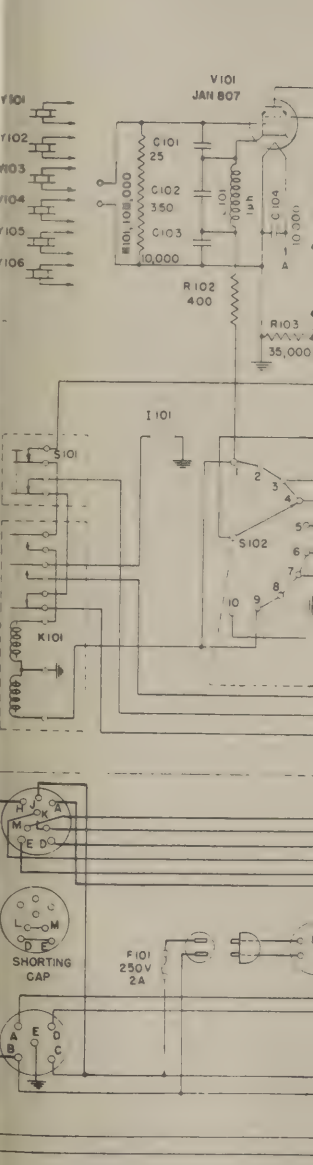
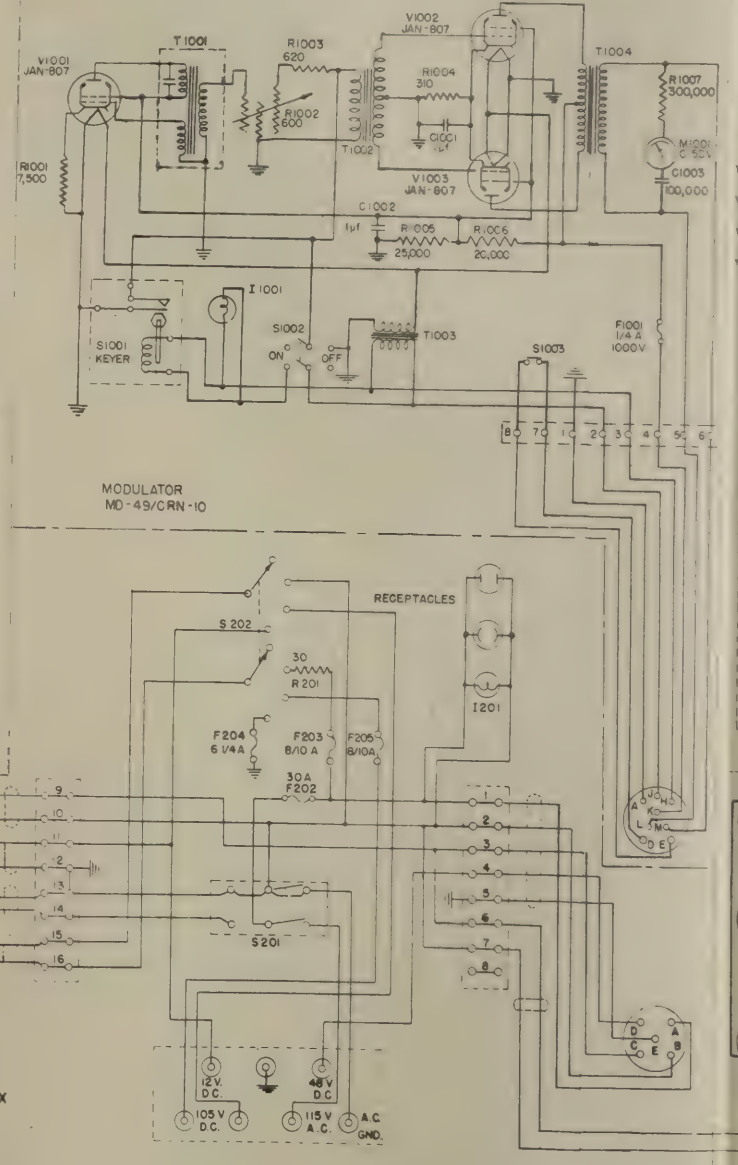
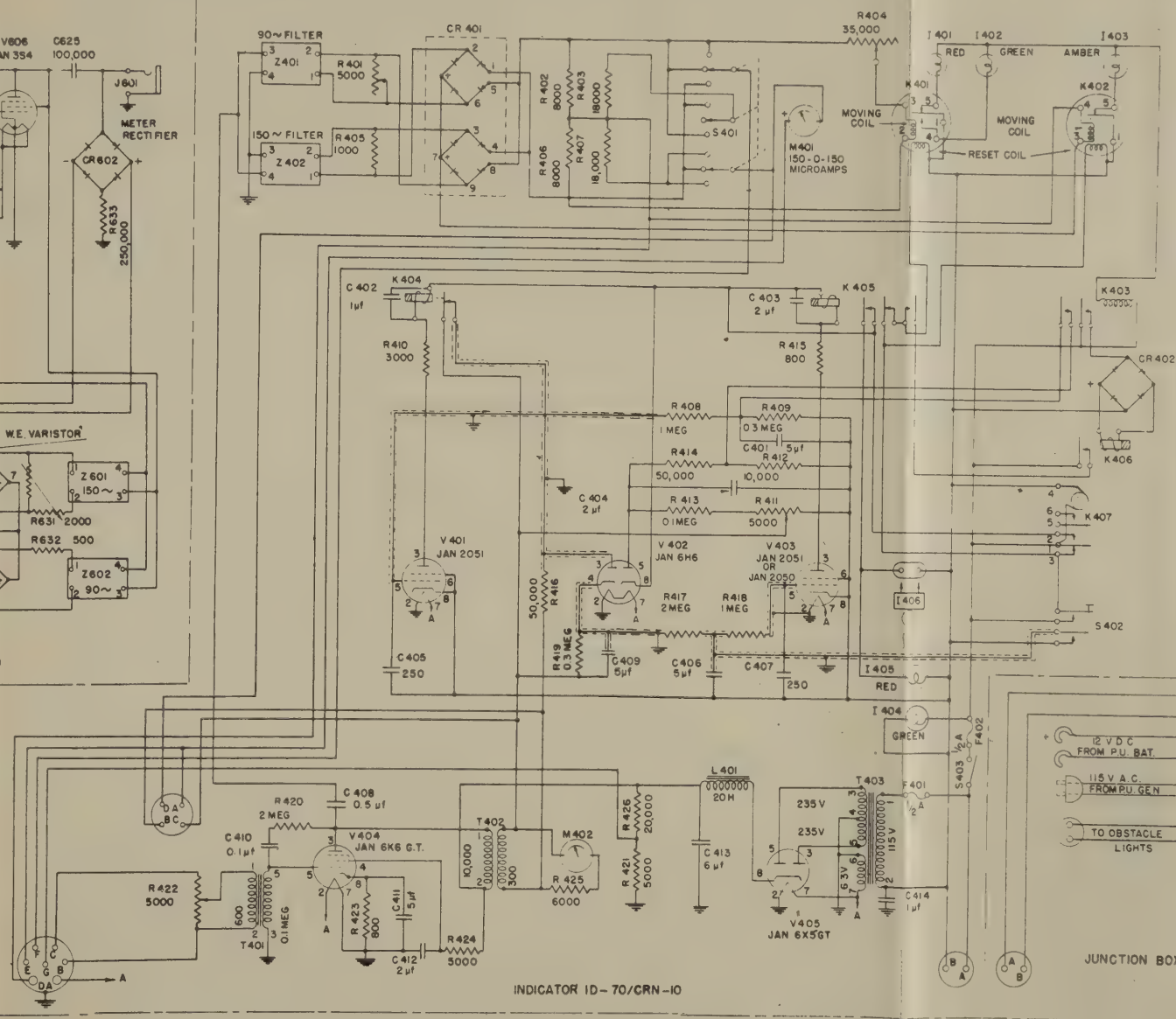
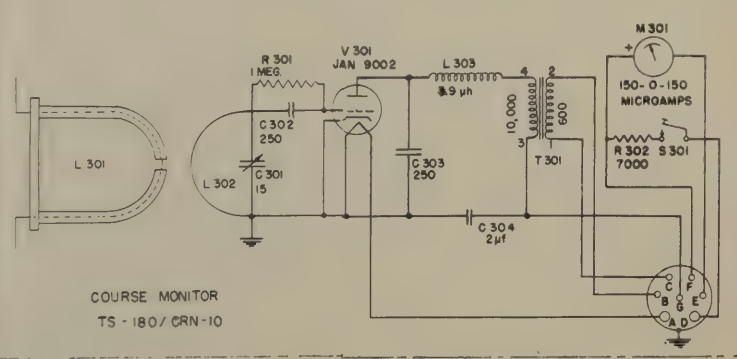
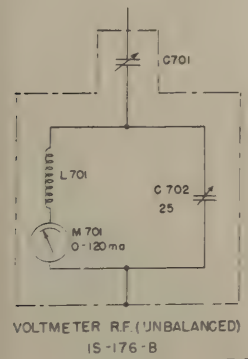
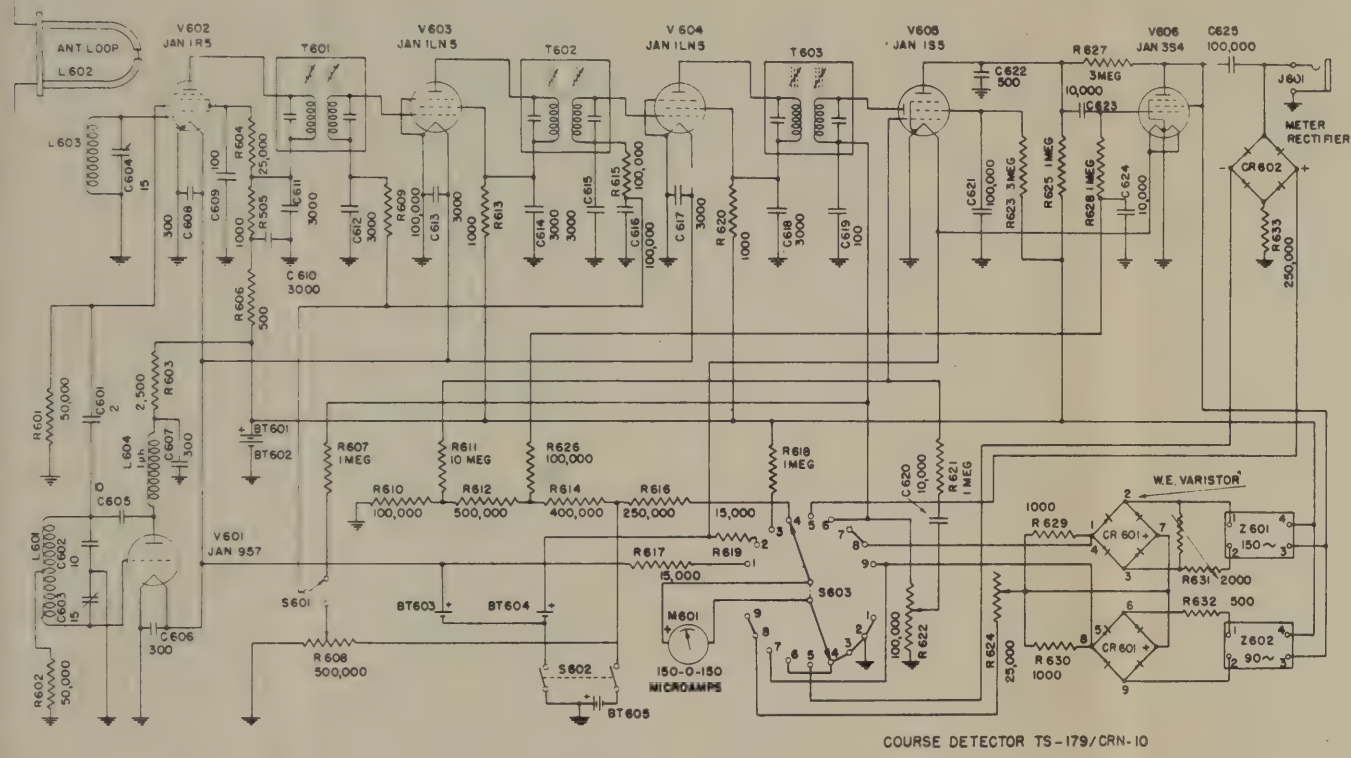


Figure 8-28A. Indicator ID-70A/CRN-10—Schematic Diagram



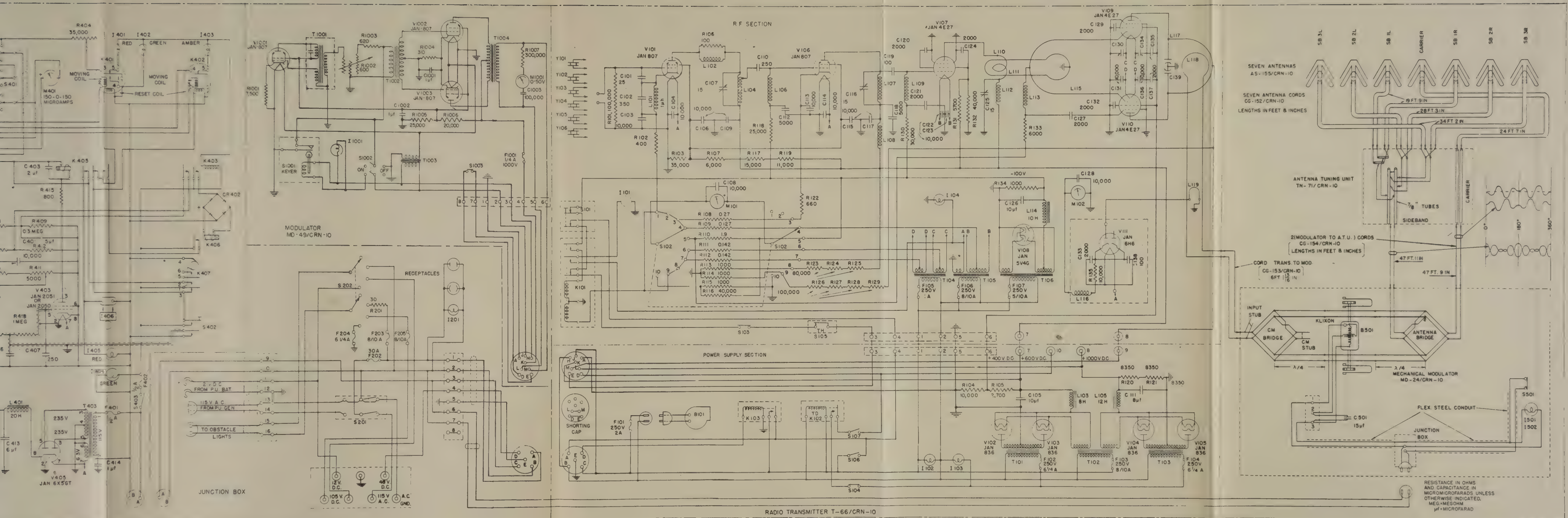


Figure 8-30. Radio Set AN/CRN-10—Over-all Schematic with Indicator ID-70/CRN-10

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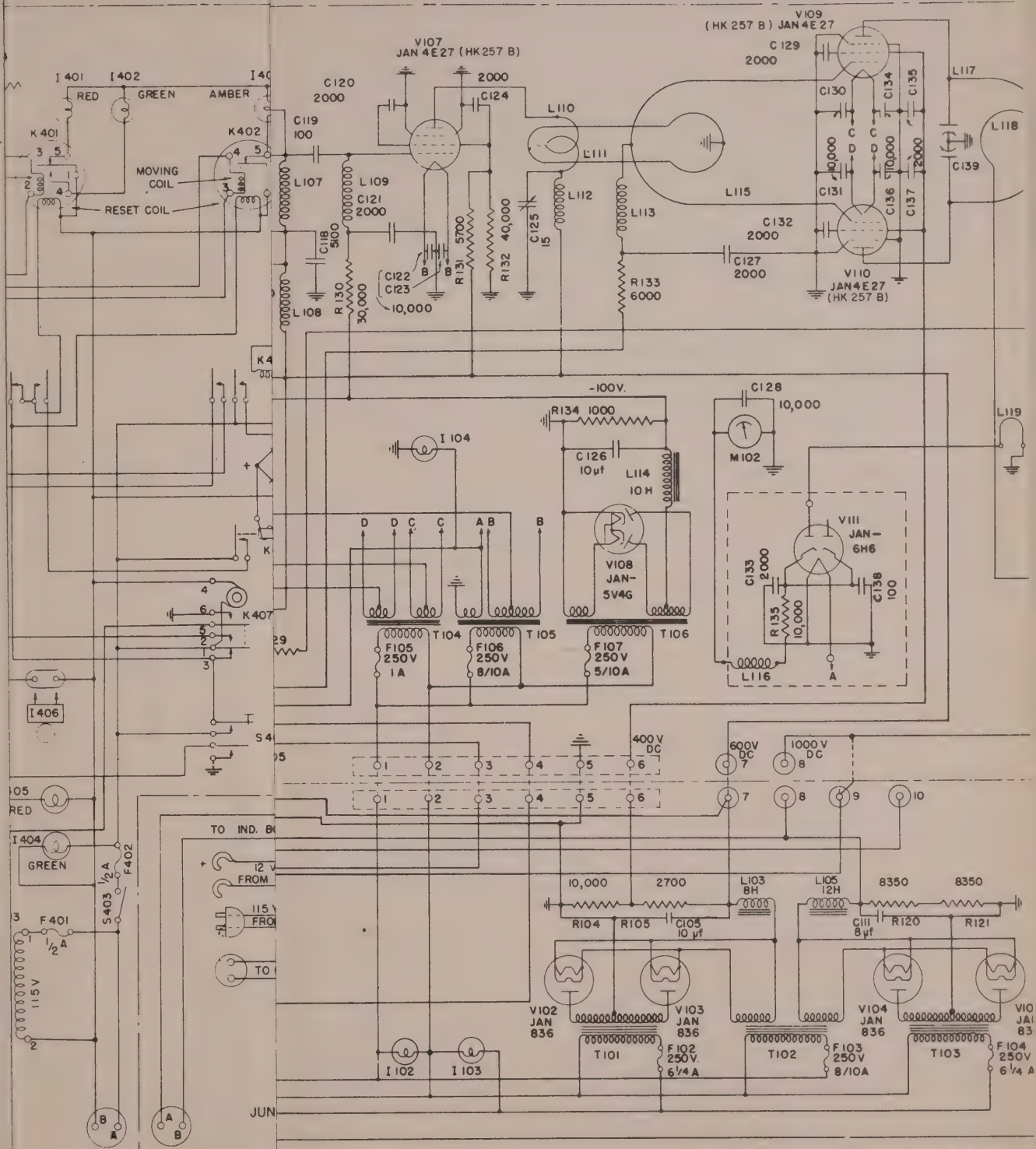
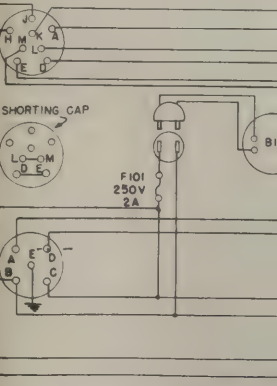
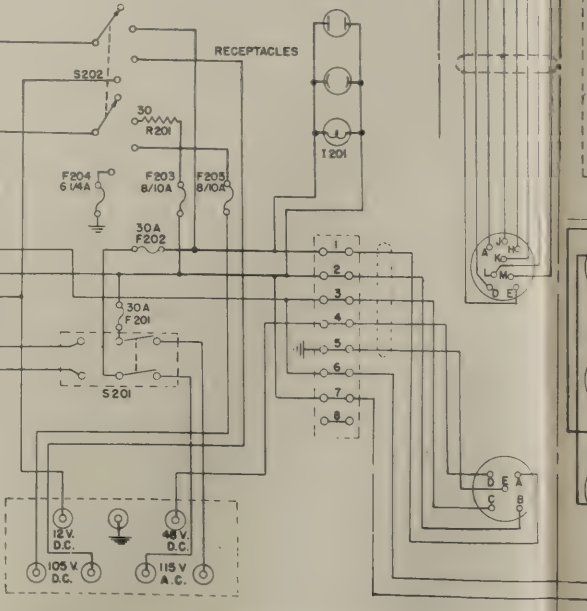
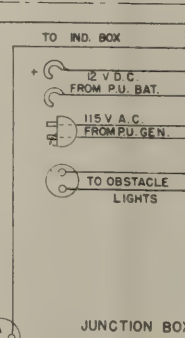
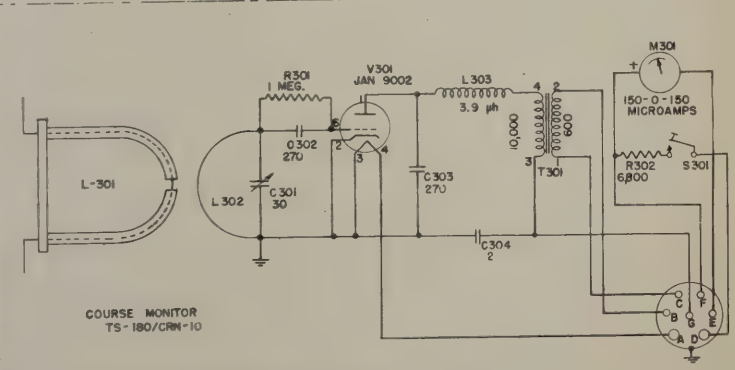
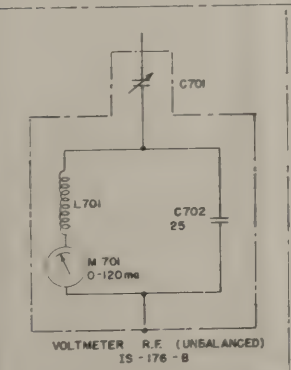
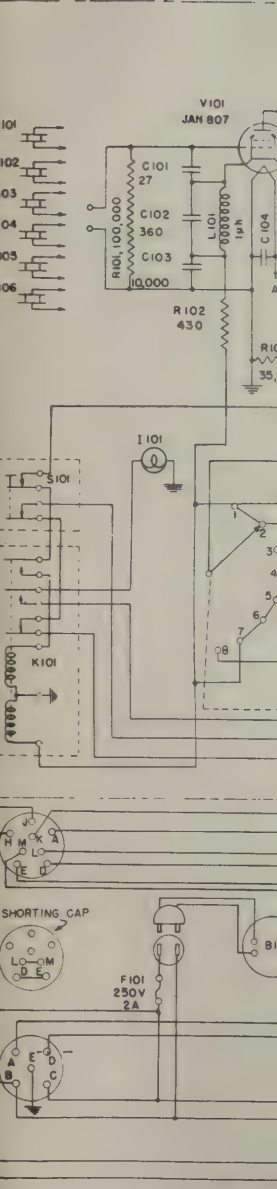
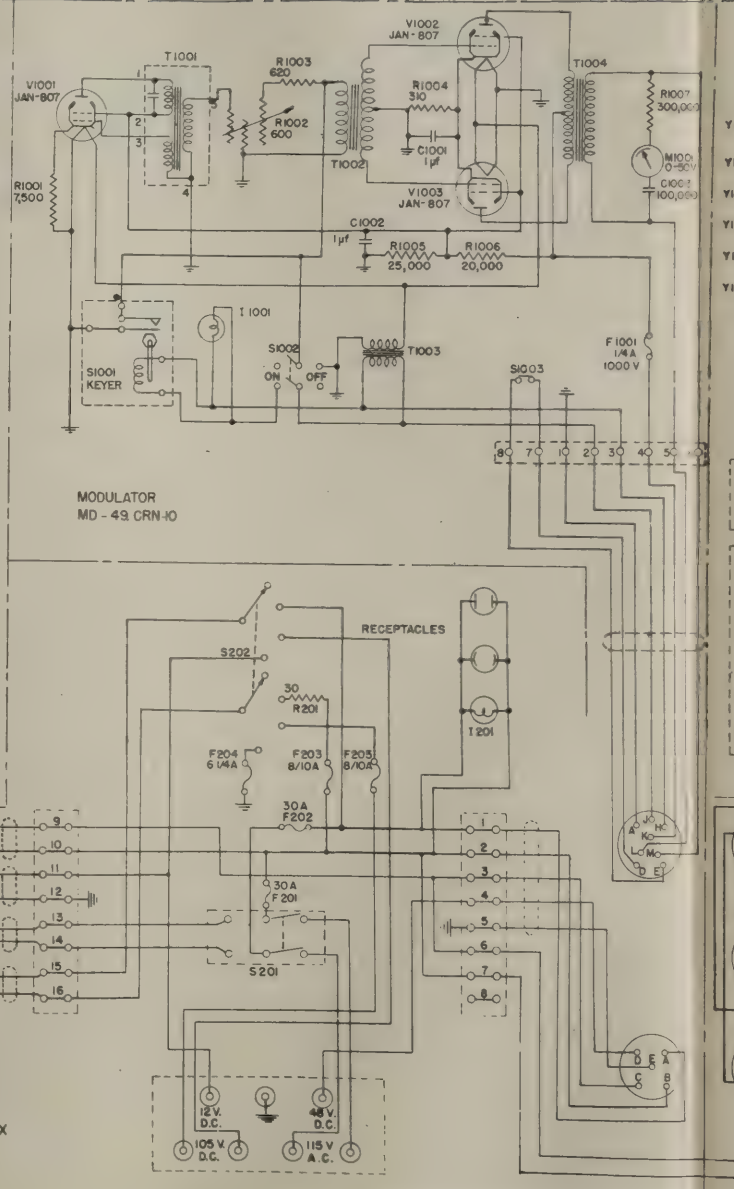
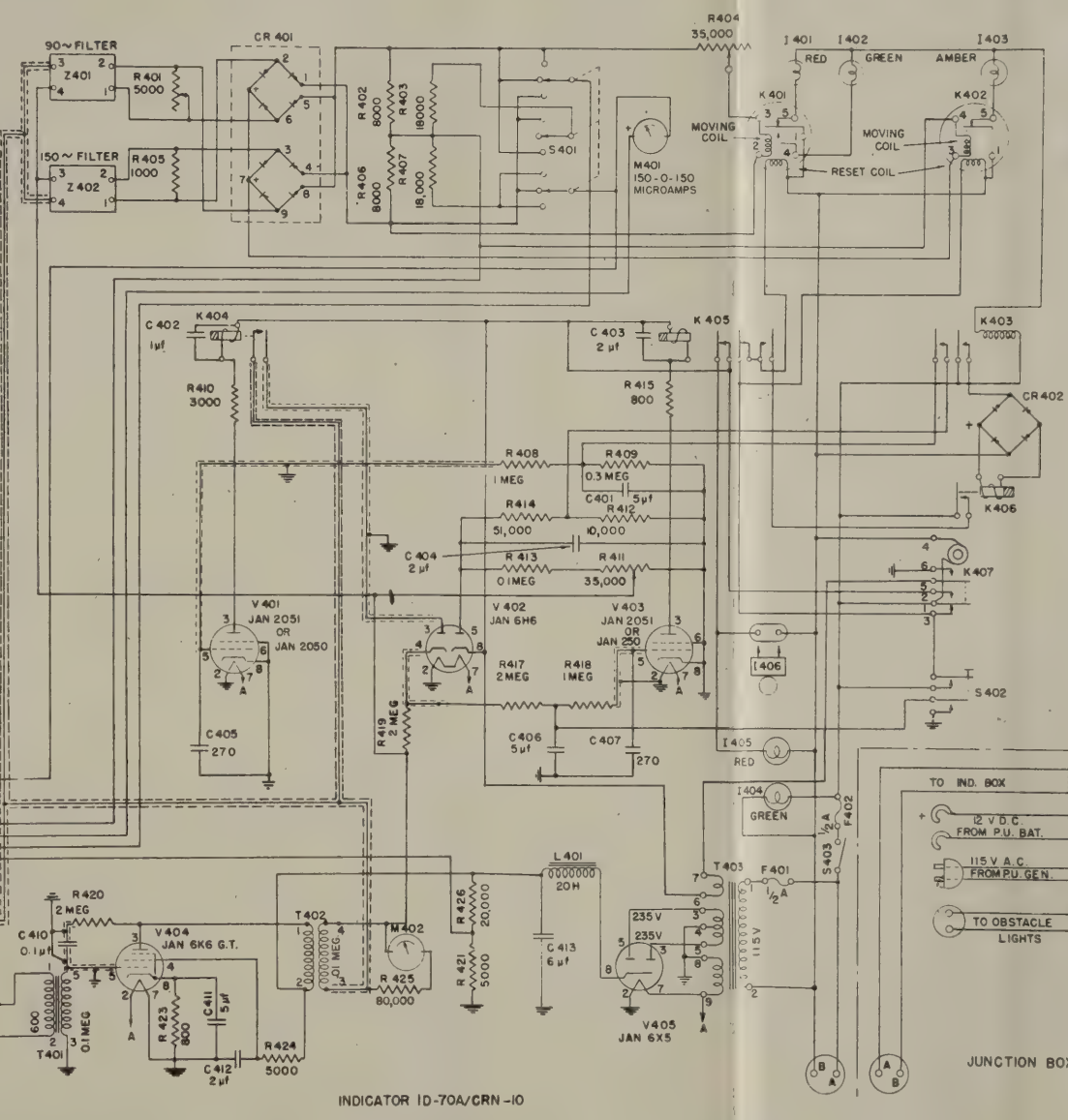
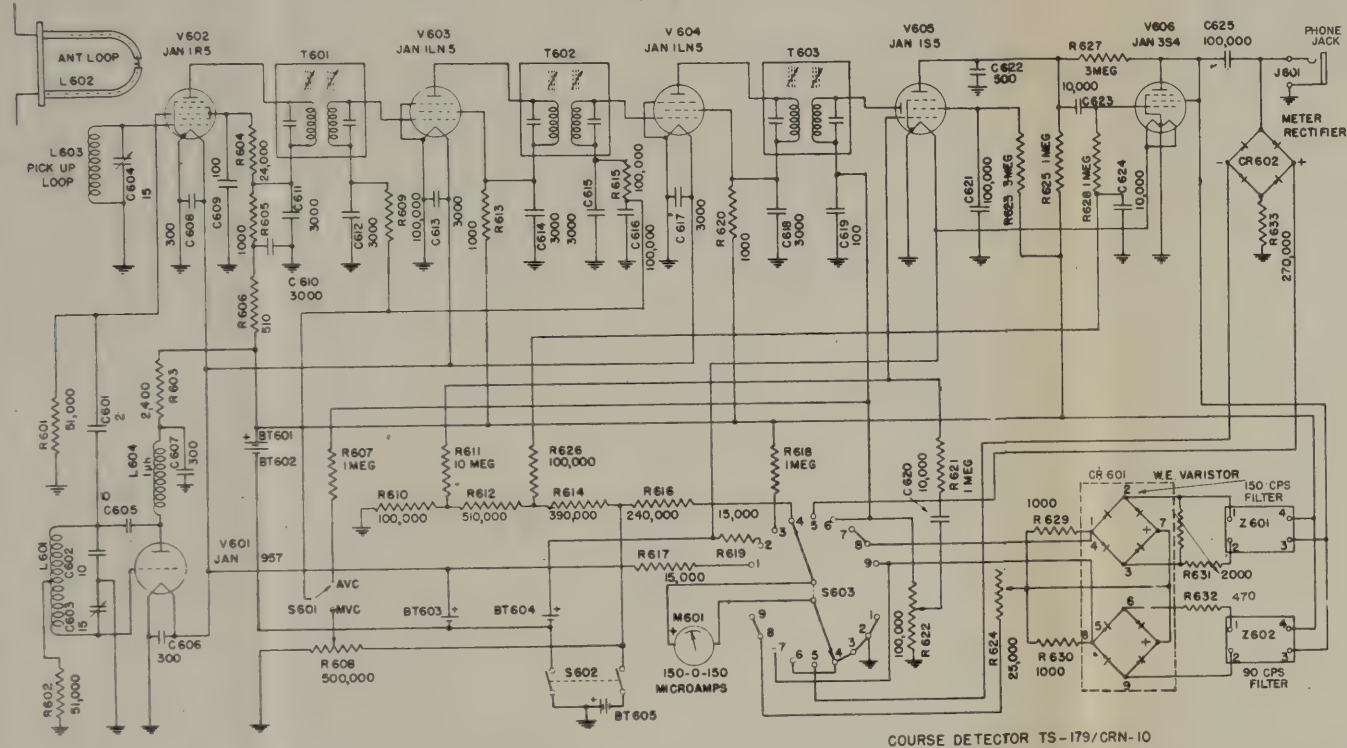


Figure 8-3

Revised 20 October 1



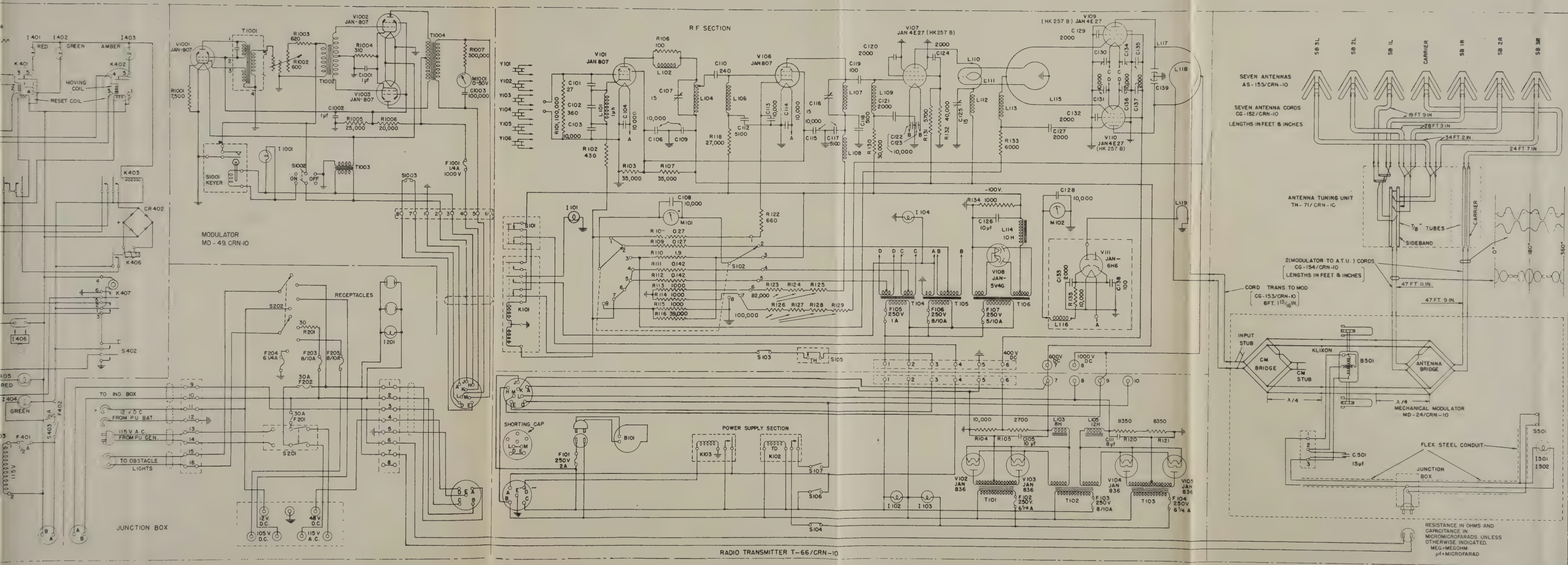


Figure 8-30A. Radio Set AN/CRN-10—Over-all Schematic with Indicator ID-70A/CRN-10

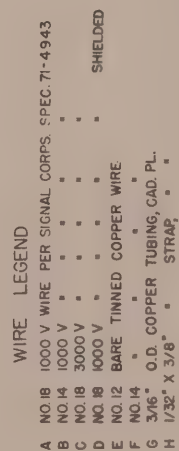
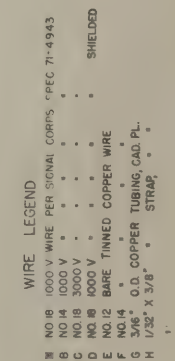


Figure 8-32. R-F Shelf—Wiring Diagram



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WIRE LEGEND

A NO. 14 1000 V STRANDED WIRE PER RA-5183-1

B NO. 18 " " " " "

C 3/8 X 1/32 COPPER STRAP, CAD. PL.

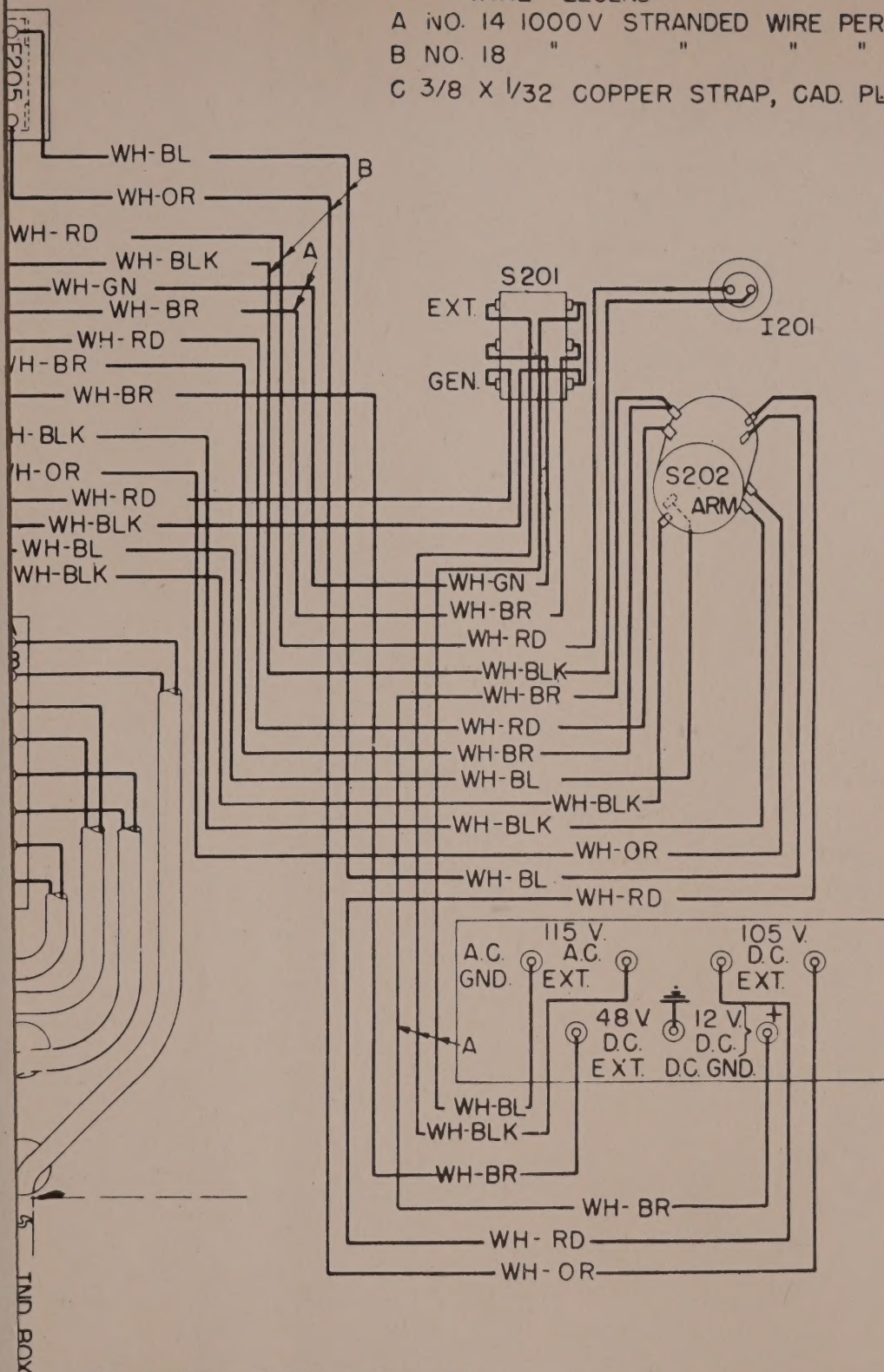


FIG. 40 WIRING DIAGRAM JUNCTION BOX

Figure 8-33. Transmitter Junction Box—Wiring Diagram

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Figure 8-33. Transmitter Junction Box—Wiring Diagram

